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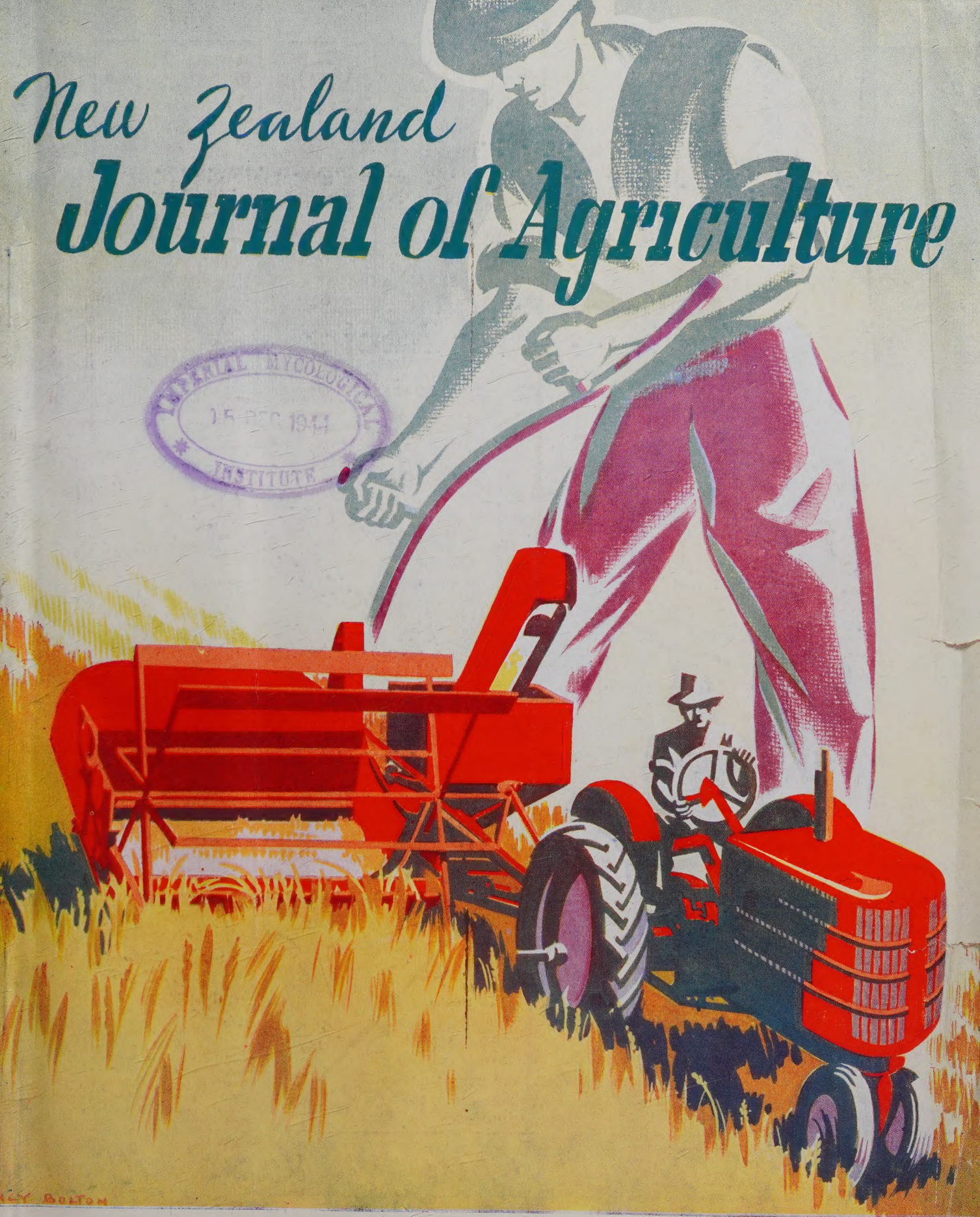

VOL. 69, No. 3. WELLINGTON, SEPTEMBER 15, 1944

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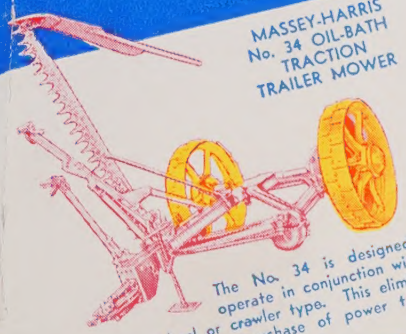

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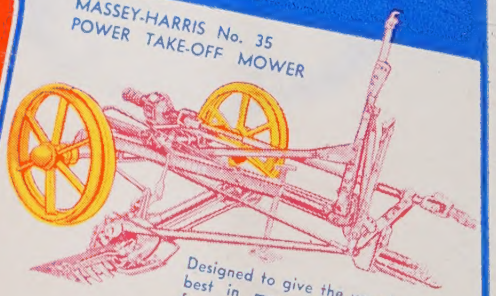

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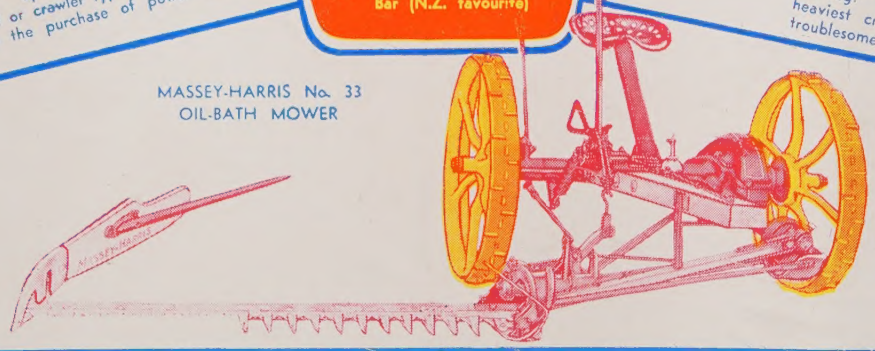

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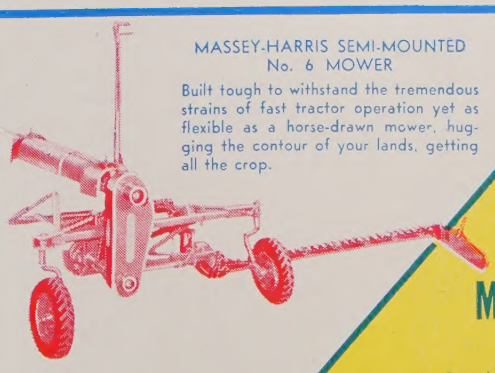

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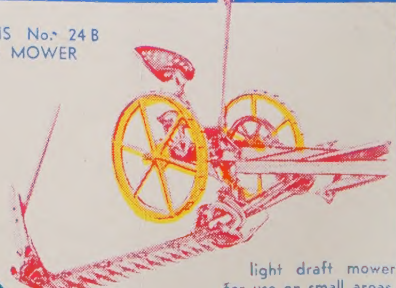

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THE NEW ZEALAND

JOURNAL OF AGRICULTURE

Vol. 69. No. 3.
Sept. 15, 1944.
Wellington.

Published by direction of Hon. B. Roberts, Minister of Agriculture.

Defence of Sheep and Wool Industry

This call to New Zealand sheepfarmers was made by Dr. Ian Clunies Ross before his recent return to Australia. Dr. Ross had just concluded a visit to New Zealand at the invitation of the Dominion Government to confer on matters affecting veterinary education. Dr. Ross is Dean of the Faculty of Veterinary Science at Sydney University and was the Commonwealth's representative on the International Wool Publicity and Research Secretariat from 1937 to 1940.

IT is clear beyond doubt that in the post-war years the sheep and wool industries of Australia and New Zealand will face problems of unprecedented magnitude and gravity. In conjunction with the problem of disposing of a wool surplus in producing countries of ten to twelve million bales, wool in all consuming countries will meet the competition of synthetics of steadily-improving quality and great diversity, synthetics which are backed by the scientific and other resources of great corporations in Great Britain, the United States, Europe, and Asia.

What action must producing countries take to safeguard the future of their industries, on which their future prosperity so largely rests? It is suicidal stupidity to maintain that all one needs to have is faith in wool and to hope for the best. It is almost as short-sighted to say we should turn to fat lambs and meat production, since all wool-growing countries could rapidly expand production of lambs far beyond the present capacity of the world's markets, and oversupply would lead to a fall in meat prices as disastrous as that of wool.

Surely there is only one course to be taken by Australia and New Zealand, and that is to match the resources and efforts of the synthetic fibre producers with the far greater resources of the tens of thousands of wool growers and of the peoples and Governments of producing countries. There is no corporation under heaven with a similar capital investment or a comparable power.

Granted that we are determined to fight and fight hard to maintain the demand for wool which today is worth to New Zealand and Australia alone nearly £100,000,000 yearly, what must we do? We must make up our minds that our effort will be on a scale never previously contemplated. We must take every step necessary to ensure, by research and extension, that loss from disease and inefficient production is reduced to a minimum. We must know what characters in wool are important for varying manufacturing purposes, and how by control of heredity and environment production policy may be modified to meet changing market requirements with speed and efficiency. We in the producing countries, who alone are vitally concerned in wool's future, must accept responsibility for textile research, to discover methods of improving the processing and manufacture of wool, and to find new modifications and uses for it, to demonstrate its virtues and versatility and its relationship to human health.

Dr. Ian Clunies Ross.

We must, through the International Wool Secretariat, show the people of the world and tell the people of the world what wool, as the product of modernised and revitalised industry, can do. We must recover old markets, and find new markets.

All this will cost money, and will demand energy and initiative comparable to that shown by wool's competitors. Wool growers, the community as a whole, and our Governments have all a responsibility to provide the resources necessary. Can we fail to believe they will do so when the danger is realised?

To You
who feed our FIGHTING MEN

The farmers as producers are doing a magnificent job. But it will take money as well as food to finish this war. Though Victory may be closer, the last shot has to be paid for.

The money is here. There is more money in circulation in New Zealand than ever before. Everyone should put as much as he can to work for Victory.

More individual New Zealanders to lend for Victory. That's what is needed.

So, Mr. Farmer, use your money to—

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For Stock or Bonds enquire at any Bank or Sharebroker, or any Postal Money-Order Office.

BACK THE ATTACK!

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OATS

— By —
A. STUART,
Instructor in Agriculture,
Invercargill.

Although oats can be grown anywhere in New Zealand, they prefer a moist, cool climate, such as obtains in Southland. This is evidenced in the heavy yields of milling oats secured by growers in this district.

IN the North Island, outside of the Wellington Province, only small areas are grown, and these are utilised mainly for feeding as chaff. In the South Island Canterbury is the largest grower of oats either for threshing, chaff, or greenfeed, followed by Otago and Southland. Otago uses more oats for chaff and greenfeed than does Southland, but the latter leads Otago in the acreage threshed. With the decline of the horse as motive power on the farm, the acreage of oats has correspondingly decreased over the past two decades, particularly in the cropping districts of the South Island.

Soil and Rotation

Oats require a fairly free loam of good second-class quality for best results, but they can be grown on almost any class of land. In the same way they can be grown almost anywhere in the rotation. In Southland they usually follow swedes or turnips, but may follow wheat, linen flax, or even grass. Frequently they are sown as a nurse crop to grass.

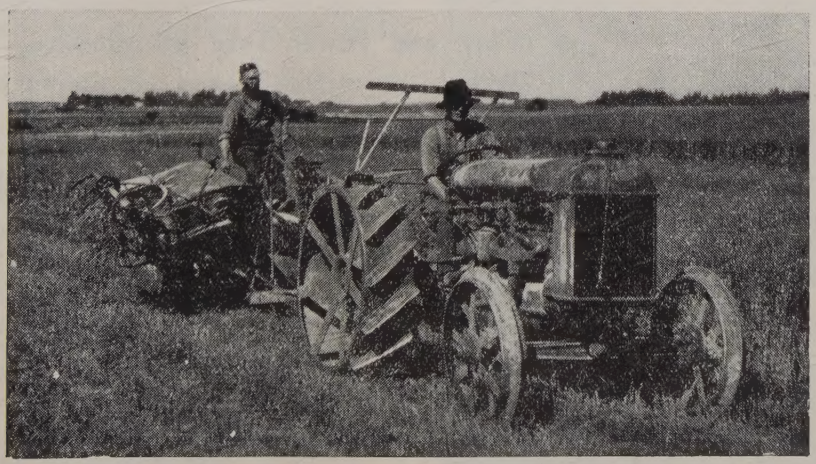
Cultivation and Seeding

When autumn sown oats would usually follow wheat or linen flax. In this case the land is ploughed as soon as the paddock is clear of the previous crop, which would normally be February or March. It is then worked down and sown, leaving a fairly rough surface so as to avoid excessive caking of the land during the succeeding winter. For such crops harrowing after feeding off in the spring will be found beneficial.

When spring sown following swedes or turnips the ridges are disced down immediately the breaks are eaten by the stock. If the land is free of weeds, ploughing may not be necessary, but generally a shallow ploughing would be recommended, followed by at least two discings, followed by harrowing. When oats are used as a nurse crop to grass a finer and firmer seed-bed is necessary than when oats are sown alone, and the use of the Cambridge roller before sowing the grass is imperative. Clod-crushing as an alternative to rolling is frequently availed of between discings.

When spring sown after grass the land is usually ploughed from May onwards, and disced at intervals in the early spring, in order to destroy successive germinations of weed seed, which in Southland is comprised mainly of yarr (spurrey). A final discing and harrowing is given immediately before drilling. Sown in this way at least three, but possibly four, double discings, followed by harrowing, are required.

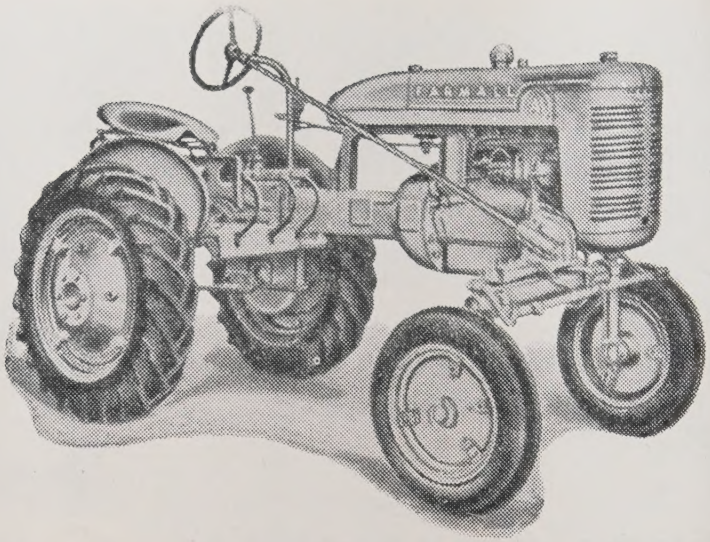
In Southland the bulk of the crops are sown in the month of October, and heavy seedings are the rule. Generally 4-5 bushels per acre is the seeding, but this is reduced to 3 bushels when sowing with a grass mixture. This seeding is again reduced for autumn sowing, particularly of tillering oats, such as Duns. In Canterbury the normal seeding for spring sowing is 2 bushels per acre.



Cutting oats with a tractor-drawn binder. For lodged crops the power-drive attachment for the binder is an advantage, coupled with a rotary shedder.

Varieties Used

Gartons Abundance: This oat is more generally known as "Gartons," which is a trade term applied to all white oats, with the exception of those of a distinctive character, e.g., Sparrow-



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bill. This latter variety has largely been replaced by Gartons Abundance, which is shorter and not as coarse in the straw and is not so subject to straw-break, a condition wherein the stems break off about 18in. below the head as the crop approaches maturity.

In Southland Gartons Abundance is generally spring sown, but further north the usual practice is to sow in the autumn. When autumn sown one good grazing of palatable feed is obtained in the spring, without affecting the resulting grain crop. On heavy soils and in wet summers this oat has a tendency to lodge.

Gartons Onward: This oat has been introduced of recent years, and has tended to replace Gartons Abundance to some extent. It does not lodge as freely as Abundance, being somewhat coarser in the straw. It has, however, shown a tendency to straw-break. The grain is very large and plump.

Duns: This is the favourite autumn-sown oat of Southland. While the greenfeed obtained is not great, about September the growth is rapid, and the crop can be fed off until the end of October, usually in breaks. These breaks can be grazed two or three times without affecting the yield of the subsequent grain crop. The grain is blackish grey and is alleged to contain a high percentage of oil, which probably accounts for the fact that it is much sought after as feed for race horses.

Algerians: This is the common chaff oat of Canterbury and the North Island. While it is not classed as a white oat, it can be used for milling. It is mainly autumn sown, and can stand successive grazings in the spring before being allowed to go to maturity. It is rust resistant in those localities where it is most popular. New season's Algerians often give poor germination unless an interval elapses after harvesting, during which the oats mature by throwing off surplus moisture.

Resistance: This oat has been tried of recent years. As indicated by its name it is resistant to lodging. It has yielded well, but is viewed with disfavour by the millers, who found it rather thin for their purposes.

Huskless: This oat has also been tried and proved to be resistant to lodging. It gives a high yield after allowing for the fact that the grain is huskless. Being naked, however, rendered the conditioning of the grain difficult, with the consequence that it did not store well. This, combined with the fact that millers could not handle it without special machinery, accounted for it losing favour.

Royal Scot and **Binder:** Both these varieties are at present under trial in Southland and show distinct promise.

A lodged crop in stook.

Threshing out of stack. The traction engine has now been largely replaced by the tractor for this work.

A heavy crop of oats which has lodged in the foreground.

Fertiliser

Oats are often drilled without manure on good soils, especially where there is any tendency for the crop to lodge. Prior to fertiliser restrictions the average practice was to drill with the seed 2cwt. of superphosphate or reverted phosphate per acre. This tended to hasten maturity. Other farmers on heavier soil preferred potassic super, while others again used potash in even greater proportions to the phosphate, as it was claimed this produced quality of grain associated with strength of straw, but in an unfavourable season this often proved fruitless in avoiding lodging.

Harvesting and Yields

The crop is ordinarily cut with the binder, and remains in stook for 10-14 days before being stacked. When intended for chaff the crop is cut greener than if threshing is intended. With the introduction of the header harvester, coupled with the shortage of labour on farms, this method of harvesting is increasing. When heading the crop should be dead ripe, or alternatively the crop may be cut with the mower, and the pick-up attachment of the header used about a week after cutting.

The average crop of oats will yield 2 tons of chaff per acre, but yields of 3 and even 4 tons have been obtained. The average yield of grain in Southland is in the vicinity of 65 bushels per acre, whereas the Dominion average would be less than 50 bushels. Yields of over 100 bushels per acre are common in Southland. With the price of oats at 3s 6d per bushel chaff should be worth in the vicinity of £5 10s per ton on trucks.

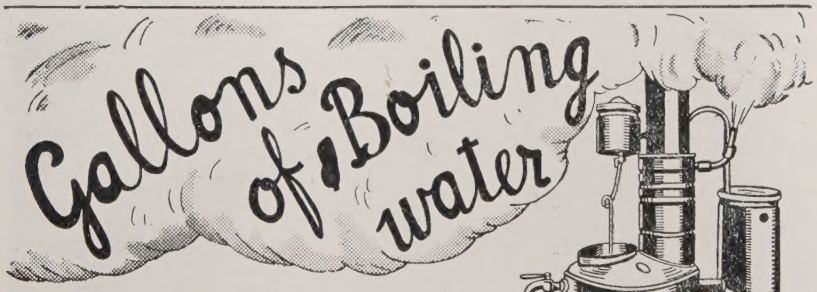
Seed Treatments

Oats are liable to such diseases as smut, rust, and mildew. Rust and mildew may be greatly accentuated by the seasonal growing conditions, and it is good policy to avoid sowing lines affected by either rust or mildew the previous year.

For smut, however, it is always advisable to treat the seed before sowing. The old method of pickling with formalin or bluestone has now been superseded by the dry dusting method with ceresan or agrosan. Two ounces of either dust is sufficient for one bushel of seed. Most lines for sowing are sold machine-dressed and dusted.

Utilisation

In the 1942-43 season 56,291 acres were grown for threshing; 121,435 acres for chaff, hay, or ensilage, and 64,639 acres for greenfeed.



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FARMING IN NEW ZEALAND

Native Vegetation

A KNOWLEDGE of the native vegetation and its distribution gives a good indication of climate and soil fertility, and the following description of the chief types of vegetation on the advent of European settlement (1840) is necessary to the subsequent description of the development and distribution of the various types of farming.

— By —

MARY AITKEN,
Fields Division, Christchurch.

IT has been estimated that in 1840 three-fifths of the New Zealand land surface was forested. The greatest extent of forested country occurred in the North Island, while in the South Island only the western areas were covered with a dense forest formation (Fig. 8). Of the remaining two-fifths of New Zealand the bracken fern and scrub formation covered the greater part of the volcanic plateau of the North Island. On the east coast of the South Island the vegetation was of a more uniform character. Extensive tracts of tussock grassland covered nearly all the land east of the ranges. At high altitudes on the main ranges, chiefly in the South Island, the steep mountain sides were covered with an alpine type of vegetation, consisting of stunted growth forms. Small areas of land were covered by characteristic swamp vegetation. These were mainly on low-lying coastal land, but occurred also in inland districts where rivers crossed flat alluvial plains. Another distinct vegetation type was that of the sand dune. Areas of dunes existed along the coastline of New Zealand at irregular intervals (Fig. 9). The greatest stretch of dune country was in the North Auckland Peninsula. Thus within the small area of New Zealand there was a great range of vegetation types, plants ranging from alpine types to those of a sub-tropical nature.

Forests

Although a large area of New Zealand was forested in 1840, much of the forest had been destroyed before European settlement. Some of it had been burnt by fires started by the Maoris when they cleared the bush for crops. Over parts of the volcanic plateau bush had also been destroyed by showers of volcanic ash ejected from the neighbouring volcanic cones. Where bush has been destroyed it has been replaced by tussock and scrub. Scattered throughout the hill country of the South Island there were old tree stumps. These remnants of a former forest cover show that large trees (mainly totara) once existed where now there is only tussock grassland. Again, swamp lands have in some cases increased at the expense of the forest. The chief cause of this is probably attributable to gradual and continued sinking of the land surface.

The native forest of New Zealand was distinctive in that it was a vegetation of sub-tropical character growing in temperate latitudes. It was essentially a mixed forest, distinguished by the number and variations of the different species of plants and trees. The luxuriant undergrowth with its creepers, lichens, mosses, and ferns made the bush difficult to penetrate. In no other area of similar climate was there such a variety of species. This is probably related to the fact that in New Zealand considerable amounts of precipitation fall in short periods of time. Another factor doubtless accounting for the sub-tropical aspect of the vegetation was the high number of sunshine hours.

Although it is possible to discriminate between the different types of forest, it should be recognised that the boundary between these types was by no means clear. Certain trees were more prominent than others in certain locations, but they did not occur in pure stands. The New Zealand forest was not a social forest. There were no pure stands of forest trees as in the northern coniferous forests. An exception occurred, however, in the bush forest to the east of the ranges in the South Island.

The main forest types were as follows:—

The Northern Kauri Forest: It was the kauri forests which first brought New Zealand under the notice of the British Government. Warships were sent out early in the nineteenth century, as spars were required for the Navy. The northern forest trees were excellent for this purpose. The kauri grew in close association with other trees which were more numerous than the kauri itself. In the northern part of the peninsula the kauri and the taraire were the dominant forest trees, while in the south the kauri was found in close association with the tawa. The puriri was a tree common on volcanic soils. This type of forest was soon cleared, as it occurred on fertile soils.

The kauri itself rose above its companion forest trees. It had a straight, tall trunk, often 100 to 120ft. in height, and a spreading crown. Where the kauri attained its maximum development it formed a high-level forest roof, below which was another forest roof at a lower level. The kauri was a tree of the lowlands, but it was not found on swampy areas. It was con-

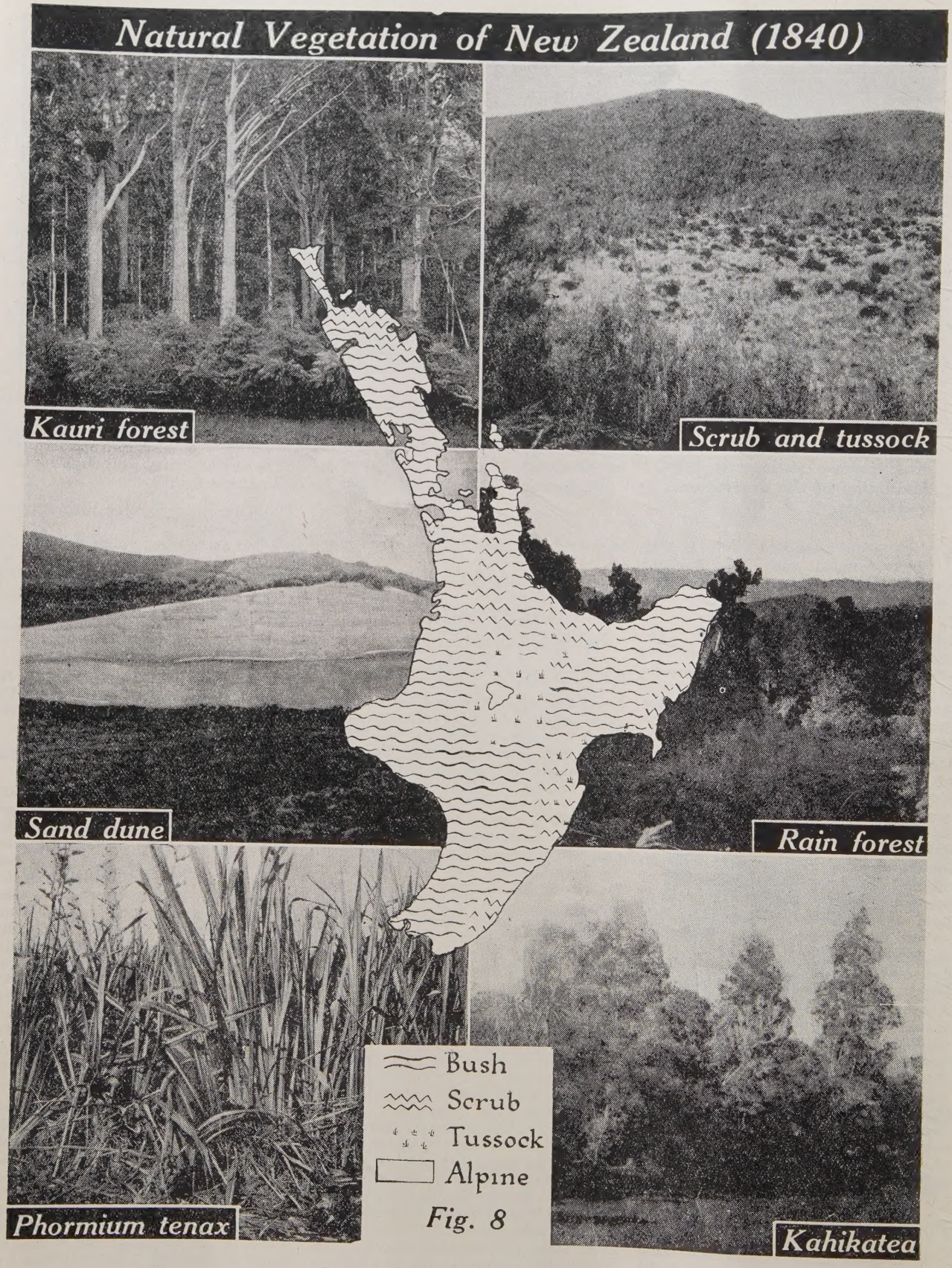

Natural Vegetation of New Zealand (1840)
Kauri forest
Scrub and tussock
Sand dune
Rain forest
Phormium tenax
Kahikatea
Bush
Scrub
Tussock
Alpine

Fig. 8

fined to the northern areas and was not found south of a line stretching from Kawhia to Tauranga, i.e., approximately 38deg. S. The southern limit of the kauri and several of its associate forest trees is closely related to the line of the mean annual temperature of 57deg. F. Southwards the mean annual temperature decreased and the number of ground frosts increased.

The kauri forest of New Zealand is one that has gradually been dying out. Over long periods of time a combination of vegetation, soil, and climatic factors has led to podsolisation of the soil. On these areas the kauri was replaced by scrub. These scrub areas were later dug over for gum and became known as the gumlands. Thus at the time of European settlement it is important to discriminate between those areas which carried kauri and those which carried only scrub. Briefly, the history of the northern forest lands is as follows:—The kauri was milled, and the milled areas covered by second growth and manuka scrub. These were surface sown after a secondary burn, and today are in danthonia pastures. It should be noted that it was the forest areas which were first settled and not those of the scrub or gumland.

Rain Forests: The rain forests formerly extended over the greater part of the North Island, the West Coast areas of the South Island, and Stewart Island in the far south. Viewed from above the forest presented an unbroken cover of dark green. It was only a view of the interior of the forest that revealed its truly sub-tropical character. Here it could be seen that the forest was composed of several layers of forest trees. There was an abundant wealth of plant life, composed of varying shades of green. Lianas, ferns, lichens, and seedling trees covered all the available ground space on the uneven floor of the forest, which was strewn with the decaying trunks of trees. The growing forest trees themselves were covered with many species of small plants.

The composition of the rain forest varied greatly throughout New Zealand. The most widespread tree of the rain forest was the rimu. It extended, often in association with other trees, notably tawa, totara, and kahikatea, from south of Hokianga Harbour to Stewart Island. The character of the rain forest gradually changed from north to south. This change was mainly due to the range of several plants and trees being limited to the south. Several northern forms reached their southern limits in northwestern Nelson and northern Marlborough, i.e., approximately latitude 42 deg. S. Also there were several plants and trees which occurred only in the South Island. Even within small areas there were marked changes in the character of the forest. Factors of surface relief, soil, and climate had a corresponding effect on the nature of the vegetation. The most pronounced change in the dominant tree type was largely due to the effect of altitude.

The rimu was a tall, slender tree with a crown of small branches, bearing yellowish green leaves. It occurred on most of the lowland and lower hill country. It was found only at an elevation of 2000ft. in northern, East Cape, and interior districts. On swampy areas on the coastal lowlands it was replaced by kahikatea (white pine). These swamp forests formed distinctive plant communities. Kahikateas were the most numerous swamp trees. The trees had long, narrow trunks, which grew close together, and the high branches had sparse foliage. On drier ground totara (black pine) often replaced the rimu, but it grew mixed through rimu forest areas. This rimu-totara association often occupied wide areas in the rain forest. On land of high altitude in the North Island rain forest passed rapidly into rata and beech. These forest areas, however, occurred on land which was so steep that it was unsuitable for farming.

Much of the North Island rain forest has been cleared for pasture land. The forest was felled and burnt and the cleared land surface sown. In areas of high rainfall much of the land has reverted to bracken fern, hard fern, and manuka. Where forest has been cleared from steep slopes in regions of high rainfall severe erosion of the upper slopes has taken place. Soil has been washed from the hillsides and gullying and slips are often extensive.

The Beech Forest: In the North Island the beech was chiefly a highland forest, but it descended to the coast in the Cook Strait district. It was in the South Island that it reached its greatest development. Along the eastern foothill zone in the South Island there was an almost continuous belt of beech forest. In southern and western Fiordland the beech forest reached the coast. Above the beech forest there was either snow tussock or an alpine type of vegetation. On many ranges the upper limit of the beech was marked by a straight line running across the slopes. At lower levels where the beech gave place to tussock grassland the boundary again was very clear cut. Although much of the eastern beech forest has been cut, no important pasture type has developed. Former beech forest areas are often populated by grasses of an inferior nature or covered by tussock or manuka scrub.

Bracken Fern and Scrub

This formation was found on sour soils, and usually indicated areas of low natural fertility. It was most extensive on the volcanic plateau on the recent showers of volcanic ash, while in the North Auckland Peninsula it covered former forest areas. It occurred also in a narrow fringe on exposed coastal country. The bracken fern is a tall plant with individual fronds often 9-12in. long. It grew very closely and was difficult to eradicate, as the plants were joined by underground roots. The manuka was a close-growing, woody scrub, often 9-10ft. high. These scrublands were converted to grass by repeated burning and sowing of seed. Heavy stocking with both cattle and sheep was practised to keep down the persistent scrub growth.

Tussock Grassland

This formation covered the eastern alluvial plains of the South Island and also extended high up the slopes of the dividing ranges. The tussock areas were characterised by an almost complete absence of timber. There were, however, in the gullies and damp faces manuka scrub and beech forest. Manuka also grew on the wide riverbeds which crossed the plains. In more open areas, especially nearer the foothills, the prickly matagouri and speargrass grew in profusion amongst the tussock. In Canterbury the watercourses were frequently dotted by the green heads of the cabbage trees, but in the drier region of Central Otago even this tree was absent. In a few areas scattered throughout the tussock remains of forest trees have been found. Whatever the cause of the disappearance of these former forests they have not returned. This suggests that a portion of the tussock grassland may be but a successional formation, i.e., if the native vegetation had been left undisturbed, it may have passed first to scrub and then to forest. On the dry plains of Central Otago, however, the grassland is regarded as a climax formation, i.e., it was the only vegetation that could grow under the existing climatic conditions, the rainfall apparently not being heavy enough to support forest.

Viewed from a distance the tussock formation appeared one vast mass of evenly-growing grass. It was, however, of a much more broken character. Individual tussocks were formed of thick bunches of wiry leaves. The tussock was the chief grass in the formation, but it was not a palatable grass. This led to extensive burning of the tussock, as the sheep would eat the young green shoots. The chief grasses eaten by sheep were the smaller plants and herbs which grew in the shelter of the tussock. The tussock protected these finer species from strong winds and the hot rays of the sun. Without the protection of the tussock the finer

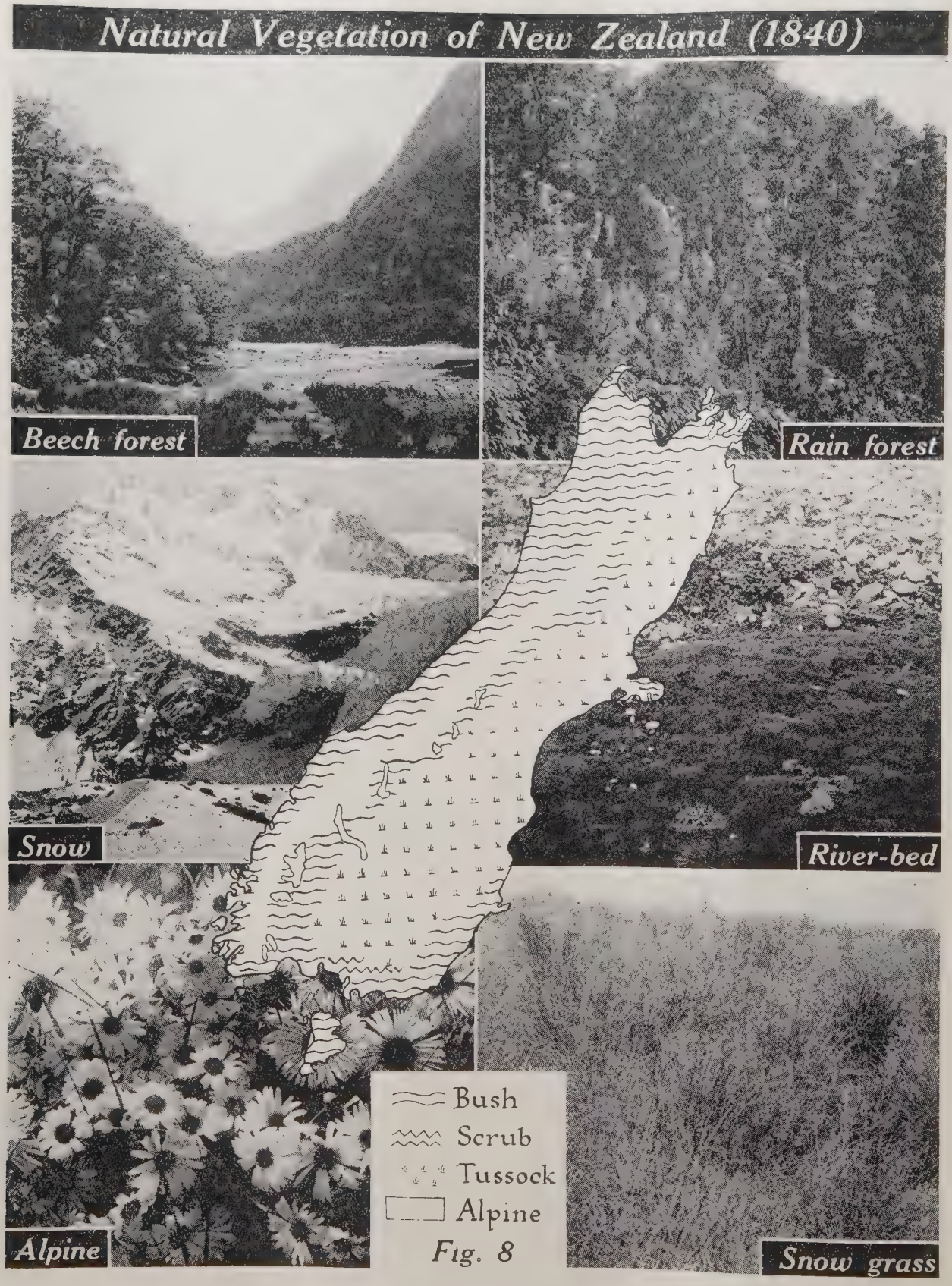
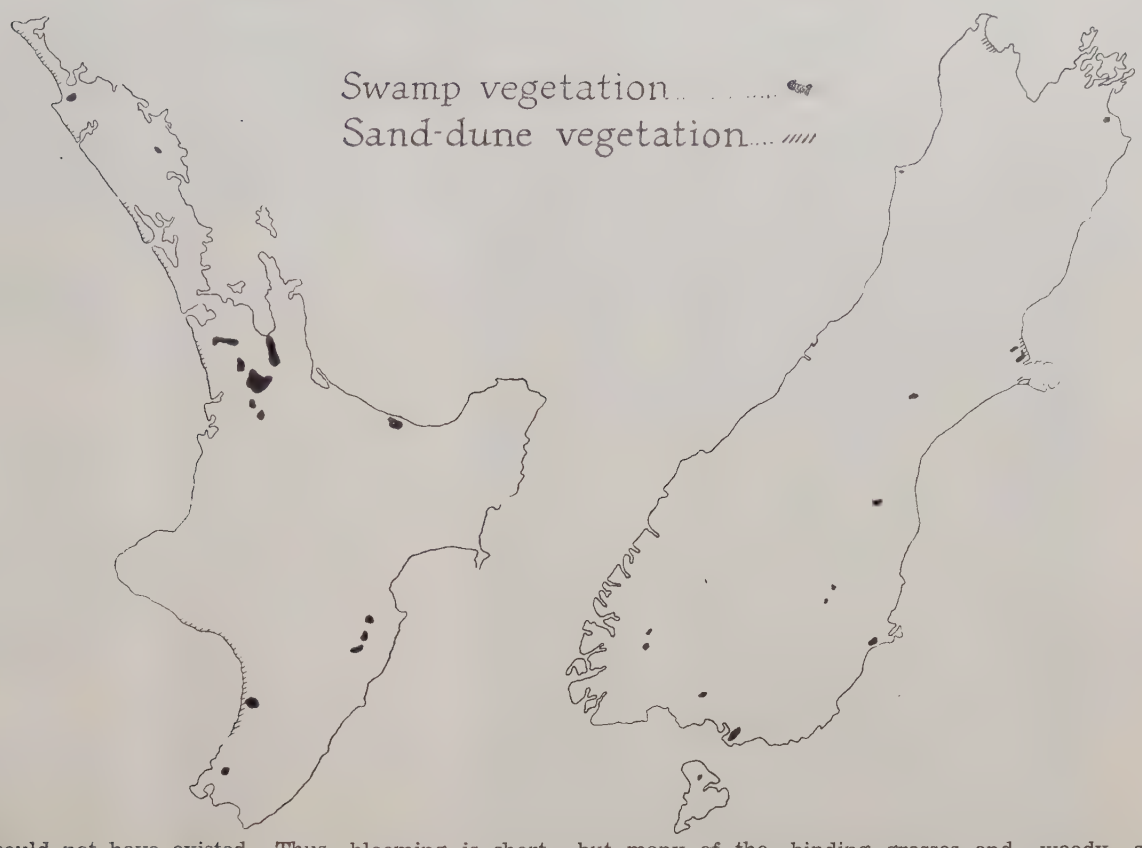

Natural Vegetation of New Zealand (1840)
Beech forest
Rain forest
Snow
River-bed
Alpine
Snow grass
Bush
Scrub
Tussock
Alpine

Fig. 8

FIG. 9: CHIEF AREAS OF SWAMP & SAND DUNE VEGETATION IN NEW ZEALAND



species could not have existed. Thus the chief role of the tussock in the grassland formation was that of a shelter grass.

There were two main types of tussock grass, the tall and the short. The short tussock grass was about 1ft. 6in. tall and 12in. in circumference. It occurred on land below 2000ft. Above this elevation the short tussock grass merged into the taller tussock or snow grass. Although much of the South Island tussock country has been cultivated, considerable areas remain. These have been modified by burning, overgrazing, and the introduction of plants and weeds.

Alpine

Above the highland tussock and forest areas there was a zone of alpine vegetation which extended upwards to the level of permanent snow. It covered a large proportion of the South Island high country and a small area on the high ranges of the North Island. The plants of this zone were composed of stunted growth forms, alpine herbs, and flowering plants and shrubs. For the greater part of the year they were covered with snow. The period of blooming is short, but many of the flowers are of a delicate nature and bright coloured.

Swamp

There were three main kinds of swamp, flax, raupo, and peat bogs. In the early days the flax swamps were extensive on lowland areas. They occurred notably on the Manawatu Lowlands, the Heretaunga Plain, and on the present site of Christchurch City. Where they have been drained they make good farming land, carrying such grasses as timothy and meadow foxtail. Raupo swamp has been drained and grassed. Peat bogs are not as widespread in New Zealand as is popularly supposed. These bogs are covered by sphagnum mosses. They occur on extremely wet areas amongst manuka scrub, e.g., Southern Otago, the Wairarapa Lowland, and the lower Waikato Valley.

Sand Dunes

Sand dune areas are outstanding features of the New Zealand coasts. Often areas of dunes extend inland for distances of 6 to 10 miles. The plant covering on the dunes consists of sand-binding grasses and woody shrubs, often manuka. The inland and older dunes usually carry a more stable vegetation than those nearer the coast. Where the sand dune vegetation has been burnt off the sand becomes exposed and the dunes may migrate inland.

Acknowledgment is made to the Director, Botany Division, Scientific and Industrial Research Department, for guidance in the preparation of Figs. 8 and 9, and to the Lands and Survey Department for the preparation of the drawings.

FARM SHELTER.

Useful suggestions on the planning and provision of farm shelter are contained in Bulletin No. 182, "Farm Shelter," which is available free from offices of the Department of Agriculture. The author has covered an exhaustive range of shelter and timber species, and the bulletin is comprehensively illustrated to show the advantages and disadvantages of particular varieties under varying conditions. Home growing, nursery buying, and planting guides are included.

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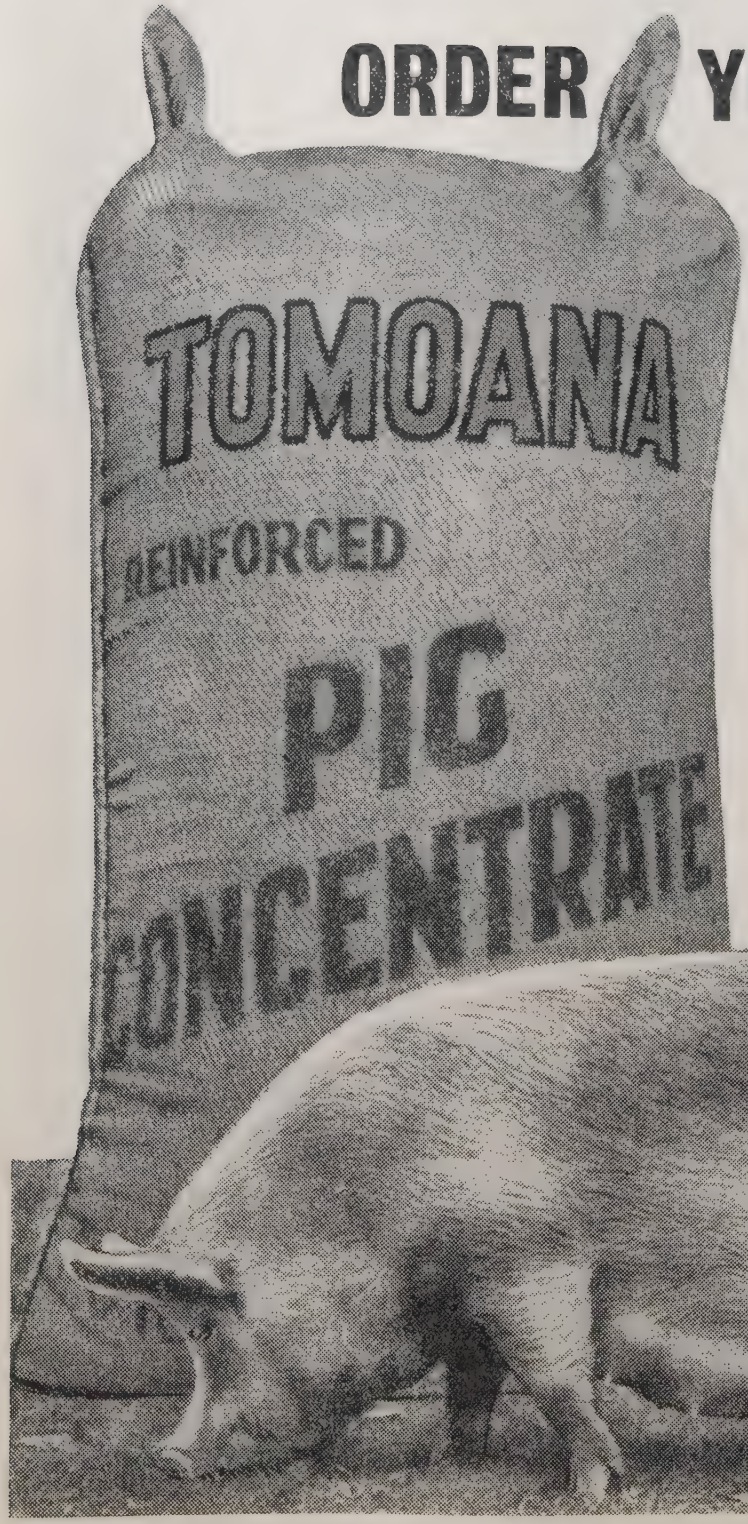

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Waikato Farmer's Success With Feeding Annual Crops

The need for greatly increasing pig production for the Armed Forces and the people of Britain has never been so pressing as it is now. While in the past pig-keeping has been limited by the amount of dairy by-product available, it is now recognised that annual crops on the farm provide one of the best and cheapest means of rapidly expanding pig production. To develop cropping for pigs the State is offering a subsidy of £5 per acre for crops grown for pigs, and this article describes the experiences, practices and opinions of a Waikato farmer who has found such cropping a lucrative side of farming.

— By —
A. T. SHANNON,
Field Economist, Hamilton.

ONE Waikato farmer who is more than sure that pigs pay dividends is Mr. J. R. Snodgrass, of Kaipaki, Cambridge, and it is illuminating to see what he has done and the reason for his confidence.

When Mr. Snodgrass began 12 years ago on 120 acres of peat and rolling country very limited capital resources compelled him to devote full attention to pig production as an adjunct to the 50 cows milked. Even when baconers fell to 5d a pound in the markets the pigs provided a steady source of cash income, and Mr. Snodgrass soon realised the possibilities ahead of him, even though lack of capital for pig housing and fencing was an immediate handicap to expansion.

In the first year butterfat production was 9000lb, and only three sows could be carried, but nine years later the position was exactly doubled. At the present time the farm carries 50 milk cows and drystock, 200 ewes, and five sows, but this winter there are 46 store pigs and substantial crop reserves, considerably more than sufficient for the stock in hand.

Cropping a Striking Aspect

Cropping for the pigs is easily the most striking aspect of the farm, yet until three years ago there were practically no crops grown. "Experience taught me that to get the most out of pigs they have to be fed well in the winter, and the best and cheapest way to do that is by cropping," said Mr. Snodgrass. "It is far the best to grow your own pig food and to buy as little as possible. Altogether I have 5½ acres of crops and buy only meatmeal."

Here is the cropping and how it is managed:—

Maize	1	acre
Marrows	½	"
Pumpkins	½	"
Swedes	2	"
Artichokes	½	"

Maize

The maize is planted in late November when danger of frost is over, and in addition to keeping the scarifier busy, the rows get hand hoed twice before the crop is ready to pick at the end of May. Realising the importance of a reserve against contingencies, one of which is a possibility of a setback to the maize, marrow and pumpkin crops by exceptionally late frost, Mr. Snodgrass has constructed a crib roofed with half-sections of old tanks. One patch of 3-5 acres of maize yielded 90 bags of cobs.

Marrows and Pumpkins

Last year pumpkins and marrows were planted 24ft. apart to get the tine harrows between them, but the intention now is to plant at 12-18ft. centres and use the scarifier or narrow tines. Fertilised with plenty of farmyard manure under each plant, the total yield from the acre was 16 tons.

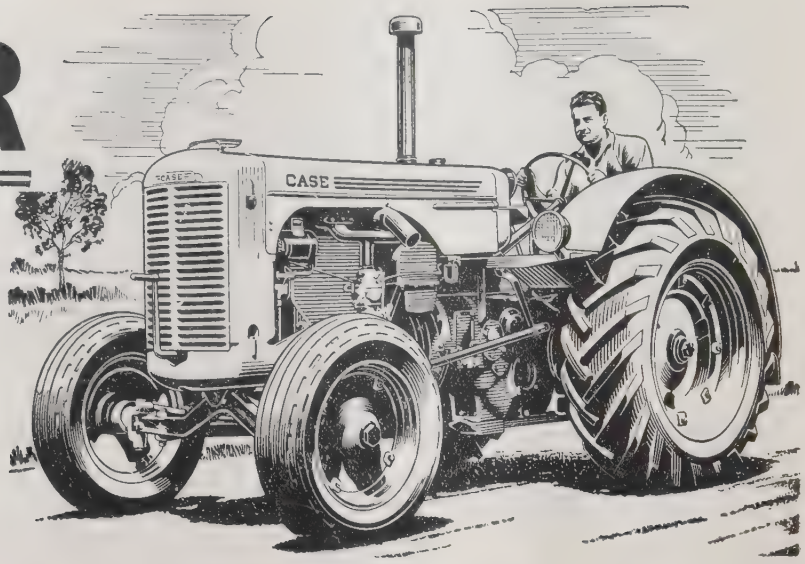
Swedes

Swedes are grown principally for the cows, but the pigs are given all they can eat from May until September. "I keep a reserve of hay and silage against a bad season," Mr. Snodgrass remarked, "so then I won't have to draw on all the swedes for the cows and sacrifice the pigs." The crop was about 20 tons per acre, which is average for the particular type of soil.

Artichokes

The big thing about artichokes is that they require little attention and labour, and, growing in an old pig paddock, no manure is needed. Late in May the pigs are turned loose on the area together with a small adjacent patch of maize, which has, of course, been picked. At the end of September, with the paddock thoroughly rooted up, the harrows are run over it and the small pieces of artichoke come away nicely, soon beating the weeds. Fed in conjunction with other crops artichokes give satisfactory results. In addition, at the back of the pig houses, handy for feeding, there is about a square chain of thriving silver beet, which is pulled about once

POWER



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or twice a week over the growth season. Mr. Snodgrass considers this to be an excellent tonic for pigs, and particularly valuable for sows in pig and with litters.

Normal Crop Programme

The cropping programme follows the normal course of renewing run-out pasture. Three years ago the present area in crops was for the most part of little value for grazing, being recently timbered. Nevertheless, Mr. Snodgrass is so convinced that crops for pigs are a handsome proposition that it would warrant breaking up even reasonably good pasture to continue cropping. One vital fact is that in all the pig feeding there is a low extra cash expenditure. Round about £14 goes in meatmeal, principally for weaners up to three months, but apart from about £10 for fertiliser and labour the entire cropping involves almost no other cash outlay, especially where seed is saved for the subsequent season. There is another way of looking at the cash aspect. Roughly the crops for pigs alone amount to three acres, which would carry at the maximum about 1½ cows, returning, say, £30 gross. From his pig returns Mr. Snodgrass knows full well that the result of cropping and feeding to pigs is "so much better."

Winter Feeding Procedure

The procedure for winter feeding is to begin with swedes in May for the store pigs and the first of the marrows as they become ripe. From June maize cobs are fed out in the paddock and also the late marrows not ripe enough for storing. At all times the pigs get as many swedes as they can eat. In late July the store pigs were in two lots. One lot of 20 had been ringed and had access to grazing daily, and to the swede paddock, while marrows or pumpkins were rationed out each evening. The other lot of 26 stores in the artichoke paddock got a five-gallon drum of maize cobs each morning and pumpkins at night, with a load of swedes about once a week. In addition both lots of pigs got their share of whatever milk was available —about ten gallons—warmed up and diluted with about its equivalent of water, and mixed with 20lb. meatmeal. As the skim milk becomes available, pigs will be stied and finished off as baconers. The idea behind all the feeding is never to keep growth at a standstill, but to increase it right through the winter. Judging by the appearance of the pigs now they have never looked back and show in their condition the full response to adequate crop feeding.

Management

Referring to litter management Mr. Snodgrass remarked: "Many farmers find their young pigs don't thrive from weaning until three months old. I have found that the greatest contribution to overcoming this is by scrubbing out the skim-milk container daily, or at least every second day. Also, my experience is that a farrowing rail in the sty is unnecessary. Mind you, I am not condemning it, but if a sow is well-fed, well-housed, and therefore contented, she won't lie on her pigs."

Maize and pumpkins for pig feeding.

At the moment there is a capacity for carrying more pigs than are on hand, a situation which has arisen because it has been the policy to buy stores in June when the prices are lowest, but unfortunately this June has not been true to form. "Stores that would have cost me 22s a year ago are up to £2 now. I intend to carry a large proportion of my maize over and in future rely almost wholly on breeding my own pigs rather than on buying," Mr. Snodgrass said.

Layout

A description of the pigs would be incomplete without a reference to the layout. The original layout was on the 8 x 8 hut and grass pen system, but increasing disease over a period of years led to the conclusion that this did not suit the soil or the climate. The result of much thought was the adoption of the Preston sty, designed by H. H. Preston, the North Auckland Pig Council Supervisor. Features incorporated are the sawdust concrete floor to the sleeping quarters, retaining warmth to a remarkable degree, separate dunging passages, glazed earthenware troughs, and the benefits of the early-morning sun in the sleeping quarters. Timber, roofing iron, and reinforcing for construction came from dismantled building and machinery on the farm. At first a single unit with two sties was built, but subsequently another unit has been added with a concrete water tank and ball-cock. This structure should be good for a minimum of 30 years as compared with, say, ten years at the most for the wooden huts, and maintenance costs are proportionately less.

Analysis of Returns

Because of the heavy incidence of disease a few years ago, which had been responsible for a continued low level of returns, it is not easy to present an accurate picture of the trend of returns solely as a result of winter feeding of crops. The disease has been eradicated through the improved housing, controlled grazing, elimination of winter starvation, and the addition of mineral consisting of four parts bone-flour, four of finely ground limestone, and one of salt, at the rate of half-teaspoonful per gallon of milk. In round figures, after allowing for feed purchasing and cash costs involved in crop production, the net pig returns per cow in the past four seasons work out as follows:—

	£	s.	d.
1940-41	1	15	0
1941-42	1	15	0
1942-43	2	0	0
1943-44	2	10	0

For the coming season the promise is for returns easily in excess of £3 per cow. Actually these figures considerably understate the position in the face of a fall in per cow production due to climate, fertiliser rationing, and other adverse circumstances. Most noteworthy of all is the fact that Mr. Snodgrass has had only one man to help him until January, since when he has been on his own and proposes in future to rely on casual labour. This independence of assistance is made possible by the non-stripping of cows.

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BACONER COMPETITIONS

New Standards for Judging

— By —

H. M. PEIRSON,
Superintendent of the Pig Industry,
Wellington.

America's interest in New Zealand production. Lieut.-Col. T. F. Durham making the U.S.J.P.B. Award.

Since 1930 enthusiasts interested in the improvement of the New Zealand bacon pig have developed various systems of judging baconers in carcase competitions. Commencing with a simple system of eye judgment, in which bacon-curers and others associated with the trade merely selected outstanding carcases as prize-winners, as time advanced and bacon competitions became popular the entries became more numerous, until in 1943, and again in 1944, the entries exceeded 2,000 carcases, which constitutes a world's record for a baconer competition.

HOWEVER, long before these events it became apparent that owing to the impossibility of selecting carcases by eye appraisal a more detailed system of judging would have to be evolved to assist judges in making a selection of prize-winners, and more and more use has been made of the direct measurement of particular characters.

It was soon proved that these direct measurements were a decided advantage over the eye judgment, in that they eliminated the personal factor to a very great degree, and in addition provided a definite standard at which the breeder could aim and by which he could measure improvement from year to year.

As has been mentioned in previous articles a considerable amount of work has been put into establishing standards, and it can be said that the enthusiasts have needed all their enthusiasm in sifting the genuine criticism of interested parties regarding various systems put forward from that of the purely dissatisfied exhibitor.

The application of direct measurements in the evaluation of a bacon pig carcase culminated in the development of the so-called "Smithfield system" of judging, provided by the well-known British experts Messrs. J. B. S. Swaine, of Empire Pork House, H. R. Davidson, of Birkhampstead, Dr. John Hammond, of Cambridge University, and Mr. N. L. Wright, of the New Zealand Department of Scientific and Industrial Research.

To this must be added the more recent work of Dr. C. P. McMeekan, Superintendent of the Ruakura Animal Research Station, "Growth and Development of the Pig, with Special Reference to Carcase Quality Characters."

Evolved in collaboration with British trade interests, the Smithfield system depended almost entirely on careful measurements of back-fat, length, leg length, and muscle development, and involved the cutting of the carcase in the loin region to enable its internal composition, eye of meat, to be accurately assessed. The system set a very high standard of excellence, the average New Zealand pig securing only about 50 per cent. of the possible marks.

Due partly to this severity in judgment and partly to the fact that cutting of the carcases involved a loss which it has not been possible for interested organisations to meet on every occasion, the system could be used in New Zealand only to a limited degree. Only in one or two instances where suitable arrangements with curers for cutting have been possible has it been used. In other districts judges have been forced to develop modifications of a type involving no serious disturbance to normal trade practices. In these cutting of the carcase has been dropped and measurement of eye muscle eliminated in consequence. More reliance has had to be placed on eye judgment.

As one such modification the National Pig Industry Council has recommended a system designed in addition to bring judging results more in line with commercial grading of bacon pigs. Measurements that could be obtained readily were retained, but even here the standards asked for were suitably lowered in comparison with those of the Smithfield scale. This system raised the average mark of competition pigs to somewhere near 80 to 90 per cent. of the possible points, and thus gave a good comparison with commercial grading. While achieving this objective, it was found subject to the very severe criticism by the judges that it did not present sufficient scope in judging to allow full credit to the really superior carcase. Conversely, it did not permit sufficient penalty to the really inferior pig.

Difficulties of this type soon focused attention on the point that it is not practicable to employ the same system both for judging pigs in competition work and for commercial grading.

In commercial grading we have a system that will sort out a few reasonably uniform lines of commercial carcases. In such lines there will naturally be a good deal of variation, though in general terms the carcase of any particular grade will be suitable for the purpose intended.

On the other hand, in judging competitions we need a system which will sort out different entries in order of merit. To do so it is essential that not only should a wide

range of marks be available, but also that this range should be used in judging. For example, in the 1943 Tomoana bacon competition full marks for back-fat were awarded to any pigs that graded No. 1 prime. Since a large tolerance in back-fat measurements is allowed in the grading system in use, this meant that pigs with ideal fat received the same marks for fat as pigs that were much fatter or much leaner. This prevented separation of different entries in order of real merit, and led to considerable confusion on the part of exhibitors and farmers viewing the prize-winning entries.

Since all of these various systems have been used in different parts of New Zealand during recent years, it is obvious that little uniformity in judging methods has existed, although one system did not differ greatly from another. With the object of securing such uniformity a sub-committee consisting of Dr. C. P. McMeekan, Superintendent of the Animal Research Station, Ruakura, Mr. H. Kneebone, of the Auckland Farmers' Freezing Co., Mr. F. Merritt, Supervising Grader of the New Zealand Meat Producers' Board, Mr. H. E. Johnson, of the New Zealand Pig Breeders' Association, Mr. J. Anderson, Supervising Grader, Westfield, and the writer was convened by the Department of Agriculture.

With wide practical experience in trade requirements and carcase evaluation work, and representing all interested parties, it was hoped that this committee could evolve a system which would be universally accepted in New Zealand bacon pig competitions. Agreement had to be reached on all major points, although finality on details was postponed until the new system had been tried out on a large scale on the pigs in the Tomoana bacon competition judged this winter. It had already been tried out successfully on a small competition organised by the Auckland District Pig Council.

The New System

In the new system a maximum of 100 points is allotted to each pig, 65 points for characters evaluated by direct measurement, and 35 points for characters measured by eye judgment. The distribution of points between the different characters is as follows:—

	Maximum Points.
By direct measurement:	
Length	20
Shoulder back-fat ..	15
Loin back-fat	20
Balance and depth of side	10
By eye judgment:	
Hams	15
Shoulders	10
Fullness of loin	10
	100 points.

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● ***MILK, VEGETABLES, WHOLEMEAL BREAD, FRUIT,*** **and one or other from these:** ***FISH, LIVER, KIDNEYS, CHEESE.***

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4a

FOR A HEALTHIER NATION

Length: Length, measured from H bone to first rib, was judged according to a scale of points and measurements. The standard required is comparable to that employed in the Smithfield system, and as a general guide a length of thirty-two and four-sixteenths of an inch for a pig of 140-145lb. is demanded for maximum points. For each four-sixteenths of an inch below this standard one point is deducted.

Shoulder and Loin Back-fat: Standards for loin and shoulder back-fats were based partly on the standard of the Smithfield system and partly on that laid down by the system used by the National Pig Breeders' Association of Great Britain. The details of measurements and points are so arranged as to make allowances for the thickness of skin, which for convenience will be measured in with the back-fat. For a pig of 140-145lb. maximum points are awarded for a depth of back-fat at the shoulder from twenty-two to twenty-five sixteenths of an inch. At the loin the standard for a pig of the same weight is fifteen to sixteen sixteenths of an inch. It will be noted that a slight tolerance of fat is permitted for maximum points. Deductions were made from both increases or decreases in fat measurements above and below this standard, since the requirements of the trade demand an optimum of fat.

Balance and Depth of Side: Owing to the importance of this character in a bacon pig, considerable attention has been devoted to the best way of measuring balance of side. Prior to the recent competition the method used in New Zealand has been to measure both the maximum depth through the chest and the depth through the flank, thereafter awarding points based on the difference between these two measurements. The smaller the difference the greater the number of points awarded.

This method has not proved satisfactory, since short, deep, and undesirable carcases frequently scored full marks. A little thought emphasises that the depth of a side of a pig should be considered in relation to its length. Accordingly, the new system has been worked out whereby the pig is measured through the deepest part of the chest, and points awarded on the ratio of this measurement to the length of the same carcase. Thus, in a pig 30in. long from H bone to first rib full points are given for a chest depth of 12in. An increase in depth of four sixteenths of an inch above this standard results in a deduction of 1 point, so that a pig 30in. long and 14in. deep secures only about 2 points out of a maximum of 10. Similarly, a pig 32in. long has to be no more than twelve and twelve sixteenths deep in the chest for maximum points and fourteen and six sixteenths for 2 points.

These figures will illustrate the general principle employed in the scale of points and measurements used in the scheme. The actual standard agreed upon for the length/depth ratio is based upon the average relationship of these two measurements in No. 1 Danish Wiltshire sides and also upon similar standards used by the National Pig Breeders' Association of Great Britain. Suitable adjustment to the New Zealand type of pig has been made. An ideal pig is one where the chest depth is no greater than 40 per cent. of the length.

Ham and Shoulders: No satisfactory method for judging these two characters by direct measurement has yet been evolved.

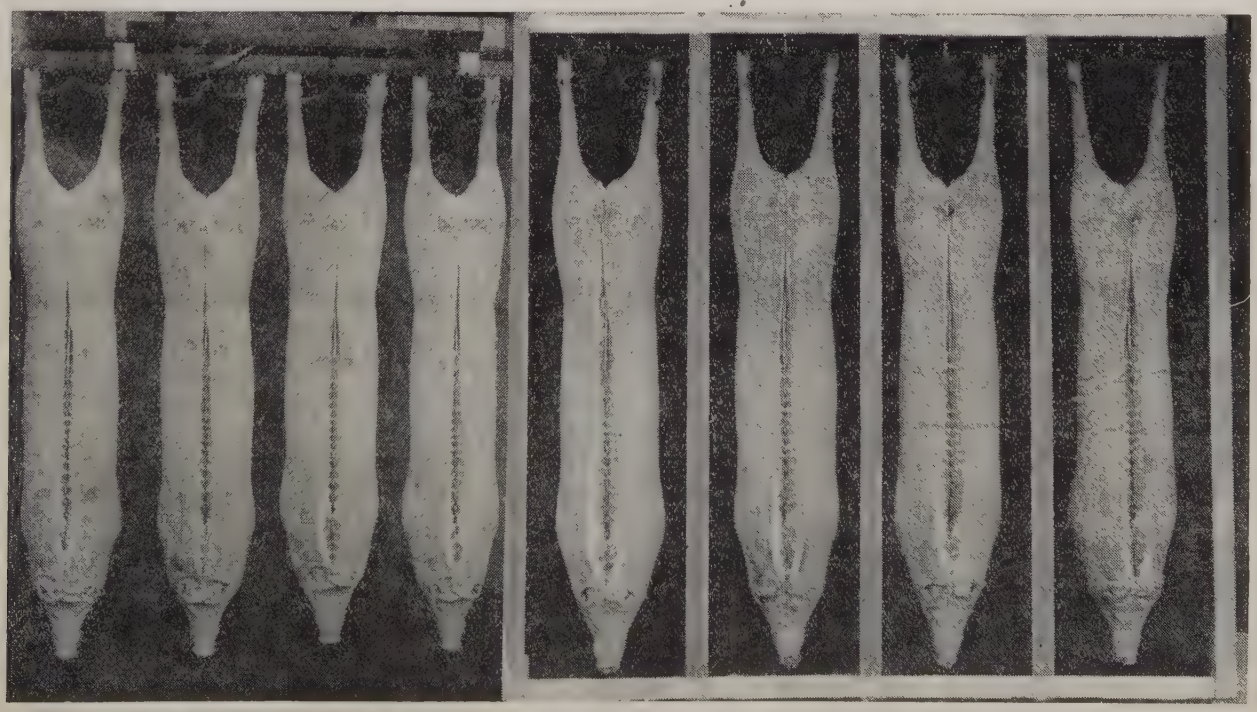
When finality with the system has been reached and a detailed account published for the guidance of judges, exhibitors, breeders, and producers a full range of photographic standards of hams and shoulders will be included as an aid to uniform eye judgment.

Fullness of Loin: Ten points are allotted under this heading to allow judges some latitude in awarding points to carcases which in their opinion are of the type and shape associated with the full development of lean meat rather than fat, taking into account also the thickness of the belly.

In this character more than in others practical experience on the part of the judge in the way carcases "cut" is essential. Its inclusion is desirable, in view of the fact that the distribution of lean and fat largely determines the value of the carcase to the consumer.

Tomoana Competition

The above system was used in judging the Tomoana winter bacon competition. Since this competition involved group entries of four pigs, special modification was necessary.



Left—Winning team, 1944, 83½ points. Right—Winning team, 1943, 75 points.

Each pig was judged separately, so that the total number of points awarded to the group would be 400. This total figure was then divided by four, to get the average award. In addition, deductions were made on the following score:—

	Points less.
Pleurisy rejects	.. up to 3
Other rejects	.. up to 5
Condemned heads	.. up to 3
Seedy-cut ..	.. up to 1
Blemishes ..	.. from 1 to 5

with a maximum of 5 points deduction for any one pig, and a maximum deduction of 10 points for the group average.

Since uniformity in weight is an important marketing point, deductions were also made for uneven weights in the entry. Such penalties were calculated on a basis of the variation of the heaviest and lightest pig of the entry.

The following scale was used:—

		Points.
Over 10lb.	variation loses ..	1
" 14lb.	" " ..	2
" 18lb.	" " ..	3
" 22lb.	" " ..	4
" 26lb.	" " ..	5

An account of the new proposal was prepared and published before the competitions were held, with the object of informing exhibitors of the way in which their pigs were to be judged in the competition. By so doing it was hoped that it would provide an opportunity for anyone interested to offer constructive criticism of the judging standards used before finality is reached and the new system adopted officially by the various pig organisations of the Dominion.

So far as can be ascertained at present the judges at least were satisfied with the results. The senior judge, Dr. C. P. McMeekan, is to bring down a report for discussion at the next meeting of the sub-committee, to be held shortly, when it is anticipated that it will be in a position to present a judging system that will be acceptable to all interested parties.

Purpose of Competitions

The production of bacon pigs in New Zealand for many years did little more than provide for local requirements. It has now become an industry. The export of pork products to the United Kingdom began with shipments of frozen pork carcases. The first shipments of bacon pigs were made about 20 years ago, but for the period just prior to the war porkers dominated New Zealand pig-production. Today the bacon pig is supreme, because of the requirements of bacon for the United Kingdom and the Allied Armed Forces in the Pacific.

Bacon pigs are ideally suited to the farming practice of New Zealand. They are complementary to our dairying industry, which plays such a great part in our economic life, and are eminently suitable for disposing of by-products which can be used profitably for no other purpose.

It is clear that those who produce pigs, those who market them, those who process them, and those who regulate and direct the industry all have important responsibilities in determining the future of the industry. It is reassuring to know that as indicated by the attendance of over 1,000 producers at the recent Tomoana bacon pig competitions this responsibility is appreciated.

Bacon competitions, besides demonstrating by comparison the good and the bad carcases, have great educational value in other respects. They are a means of bringing together people from a very wide area, making it possible for them to discuss their immediate problems as they affect the various districts, giving at the same time a sense of appreciation of the other fellow's difficulties, particularly so in regard to the manufacturing and processing side of the business.

Here the farmer begins to realise that he produces only the raw product. It is at once apparent that there must be a very close relationship between the standard for the raw material and that for the cured product, and that the standard adopted for the raw product is the predominating factor in determining the quality of the bacon placed before the consumer.

Effective as the show-ring has been in the improvement of livestock, judges have been handicapped in the degree of service they can render by certain very definite limitations.

The good and the not so good.

Bacon competitions excel in that they enable the judge to measure the degree of excellence in the finished product. The display of by-products of the meat industry is one of great interest to the producer. Like the farmer who produces pigs as a means of utilising his dairy-farm by-products, so the meat industry and the curer have to find a profitable avenue for disposing of their by-products in a marketable form.

It can be said that these by-products play a very large part in the economics of the farmer and the manufacturer alike. They are part of the whole. This waste must be successfully and economically disposed of if it is to return to the primary producer the full benefit of his labours.

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THE demand for lime in the area south of Dunedin has increased considerably during the past 10 years or so, and has, since the beginning of the war, considerably exceeded the supply.

It is interesting briefly to trace the history of liming in Southland. When the Government, realising the necessity for liming, introduced the 100 miles free railage in 1898, it was benefiting not only the farmer using lime, but also the generations of farmers to come. There was a tendency in those days, as in every new country, to exploit the natural fertility and to move on to fresh areas as, after some years of cultivation, one area began to fail.

Disastrous in America

This policy in America has led to millions of acres being today so seriously eroded that not only has the fertility of the soil gone, but also, in many cases, the soil itself. We know that erosion, both of fertility and of soil, is a problem in this country today, but by encouraging the use of lime in 1898 the Government was endeavouring to effect prevention, which is always preferable to cure.

In America one of the methods being adopted to control erosion and bring back depleted areas is to subsidise the cost of lime to farmers who co-operate with the Agricultural Adjustment Administration programme. In 1940 farmers in America applied under this programme for over 12,000,000 tons of lime, which was more than double the amount used in 1939.

When lime was first used in Southland it was all burnt, being either ground or in the lump form known as "shell lime." Shell lime is the burnt lime as it comes from the kilns. It is in lumps averaging about the size of a teacup. A very large amount was shell lime and this was carted in drays, dumped in the paddock in heaps, and spread with a shovel. The lightest application by this method was about two tons per acre, and the result of this heavy application is to be seen today in many paddocks in Otago and Southland.

— By —

S. D. BLOMFIELD, Lime Rationing Administrator, Gore.

First Carbonate

In 1904 Messrs. J. E. Watson and Co., Ltd., of Invercargill, opened a pit at Forest Hills and produced, not the burnt lime which everyone was used to at the time, but dried pulverised carbonate. This was the first time that carbonate had been produced locally for agricultural purposes, though some of the "fines" produced during the preparation of stone for the kilns may have been carted away and used by local farmers. About 1200 tons of carbonate were produced from this pit, but unfortunately the farmers did not then realise the benefits and the works closed down.

It was not until the period of the last war that carbonate was produced and recognised to any extent commercially. The first produced in Otago was at Milburn in July, 1916, but just prior to that Brown's Lime Company was producing carbonate in Southland. The demand has grown since then so much that when applications were called in 1942 for the lime required by farmers for 1943 the area which farmers wished to lime was shown as 876,298 acres for carbonate and 37,815 acres for burnt lime.

A southern lime works. *Left:* Primary crushing plant near the quarry, conveyor for crushed stone, and part of drying and pulverising plant. *Right:* Farmers' bags awaiting filling.

Special importance has been attached to lime supplies for farmers in Southland ever since the commencement of war. It was realised that supplies of fertilisers would be restricted, even prior to Japan's entry. Reduced fertiliser supplies meant that the limited quantity available would have to be used to the utmost advantage, and our experience here was that the best was got out of superphosphate applications when used in conjunction with lime. Also, it was thought that under our Southland conditions more lime was required when supplies of superphosphate were short. This was borne out by the experiments of Doak at Marton, published in 1941. In this report he states that where superphosphate is not applied annually or applied only lightly more lime is required to maintain the lime status of the soil than where superphosphate is applied in regular and comparatively heavy amounts.

Demand Exceeds Supply

At that time, 1938-39, the demand for lime was exceeding the supply available. This position became progressively worse and, during 1940-41, a Lime Committee formed from the Invercargill Primary Production Council was instrumental in establishing another lime works in the province. This works commenced operations in May, 1942, and later in the year it was realised that, even with this added source, the demand was still in excess of the supply.

In August, 1942, a meeting of the representatives of lime companies, Primary Production Councils, and merchants was held to discuss the position. It was realised that something had to be done, and forms were distributed by merchants to ascertain the tonnage required for urgent cropping operations. Limited supplies to applicants were made available as a temporary measure to tide over the immediate difficulties. Further meetings were held with the object of bringing in a more workable scheme. Forms were distributed through merchants to find the acreage farmers desired to lime during 1943. Farmers were also asked to show the month the lime was required and for what purpose they proposed to use it. The four columns for the latter question were headed, "Forage crops," "Other crops," "The sowing down of new grass," and "Topdressing." By the end of November these forms were in the hands of lime companies and the totals of each column were as follows:—

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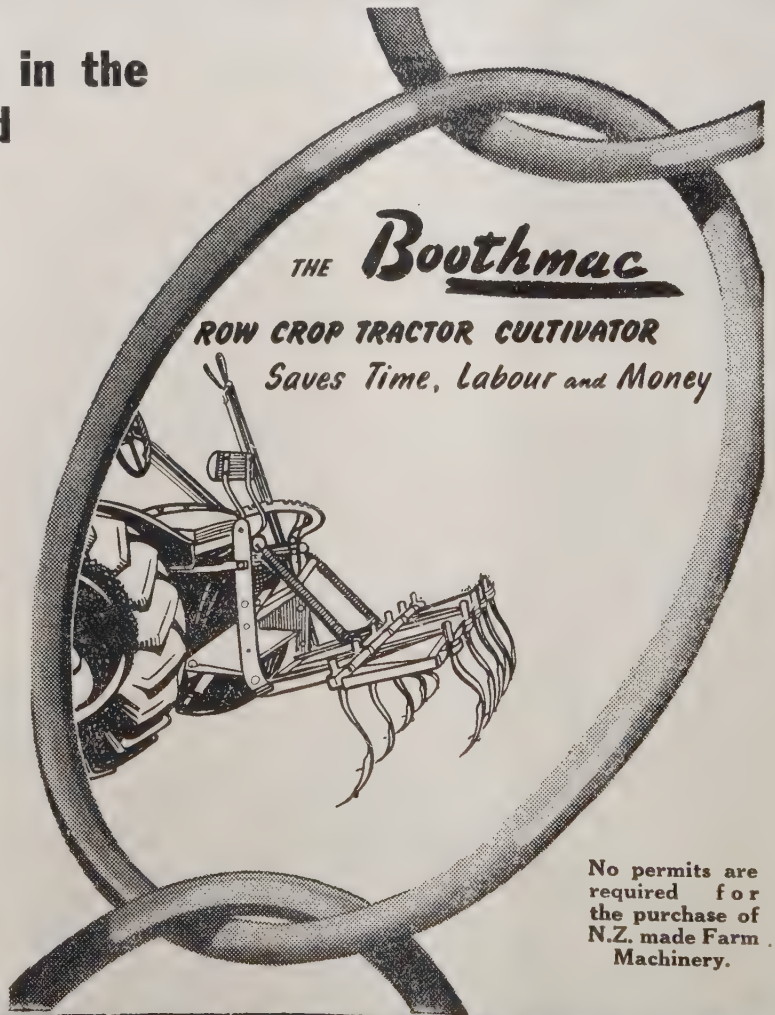

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	Carbonate. Acres.	Burnt. Acres.
Forage crops	116,545	9,436
Other crops	47,833	2,670
New grass	120,093	6,694
Topdressing	588,827	19,015
Totals	876,298	37,815

It was decided at a further meeting that the ration should be:—

	Per acre.
Forage crops	10 cwt.
Other crops	2 „
New grass	10 „
Topdressing	4 „

The ration for both carbonate and ground burnt was the same, and on the original figures it was estimated that this would require 240,870 tons of carbonate and 14,479 tons of ground burnt. The lime companies estimated their output for 1943 to be 229,907 tons of carbonate and 12,800 tons of ground burnt.

Rationing Scheme

With this information it was then decided by the Minister of Agriculture that a rationing scheme be instituted in the area south of Dunedin and administered under the Primary Industries Emergency Regulations by a person to be appointed by the Department of Agriculture.

A large number of orders had to be transferred from companies having too many applications to others whose supplies were available. A number of late orders had also to be dealt with.

During late 1943 application forms were sent out for 1944, and the same procedure was adopted with the exception that forms were returned by farmers or merchants to the administrator, who tabulated the returns and arranged them for presentation to the combined meeting held later in the year. This meeting decided the ration. The applications, put in by farmers in acres, were converted to tons and order sheets prepared for each lime company.

Satisfactory Results

The main objects in the operation of the rationing scheme have been to distribute lime as evenly as possible among those requiring it and at the same time endeavour to increase the amount available. Partial zoning has been adopted to save railway wagons as far as possible.

At the end of 1943 the results were quite satisfactory. Outputs at most works had been in excess of the estimates. Actually during the year 256,078 tons of carbonate and 14,479 tons of ground burnt lime were sent to farmers.

This year, as a result of more mechanisation, particularly in the quarries, and the modernising of some of the works, it is estimated that the output of carbonate will be over 300,000 tons, or an increase of about 20 per cent. The amount of burnt lime produced will remain about the same, between 14,000 and 15,000 tons.

Trucks and Bags Problem

There are certain problems which limit the amount of lime produced but these are being overcome. Shortage of labour is not as serious a problem as it was, mainly due to more mechanisation in the quarries.

From the point of view of providing sufficient lime to meet the ration the problem is more one of distribution than of production. The two problems in distribution are the provision of railway trucks and bags. On many occasions, due to either the shortage of bags for rationed orders or a shortage of railway trucks to take lime away, it has been necessary to send lime either in any bags which can be rushed to the works or by lorries to farmers in the vicinity of the works. This means that some of the production on which the ration is estimated is lost. It is either that or cease the production of lime until the shortage either of bags or trucks has been rectified. In either event that lime is lost to the rationing scheme, and it is far better to have some use made of it rather than lose it to production as a whole.

The bag position is now under investigation to see if some more economical method can be adopted. It is hoped that by the next season this difficulty will have largely disappeared. There is co-operation between the Railways Department, the lime companies, and country carriers to see that, as far as possible, no lime is sent to country sidings which cannot be unloaded in a reasonable time. The quick unloading of trucks is one of the most vital points to watch so that every truck may be working a maximum number of hours. A truck standing under load at a siding is an idle truck. Every truck is urgently required. The lime works situated within seven miles of Winton requires 100 to 120 trucks a day. In Southland alone approximately 16,000 bags are required daily for filling at the works.

It will be realised from these figures that the provision of bags and trucks is a very real problem. Until more efficient methods of bulk distribution and local storage bins can be adopted they will always remain a problem. Unfortunately, bulk distribution involves a major alteration in present methods together with considerable expenditure and the building of suitable bins at distributing centres.

Co-operative Effort

The present system of rationing, operated mainly by producers, consumers, and distributors working together, is largely a co-operative effort to solve some of the problems of distribution. It has its anomalies, it has its difficulties, many of which can be and are being overcome, but on the whole it is working fairly and comparatively smoothly, thanks to the co-operation of all concerned.

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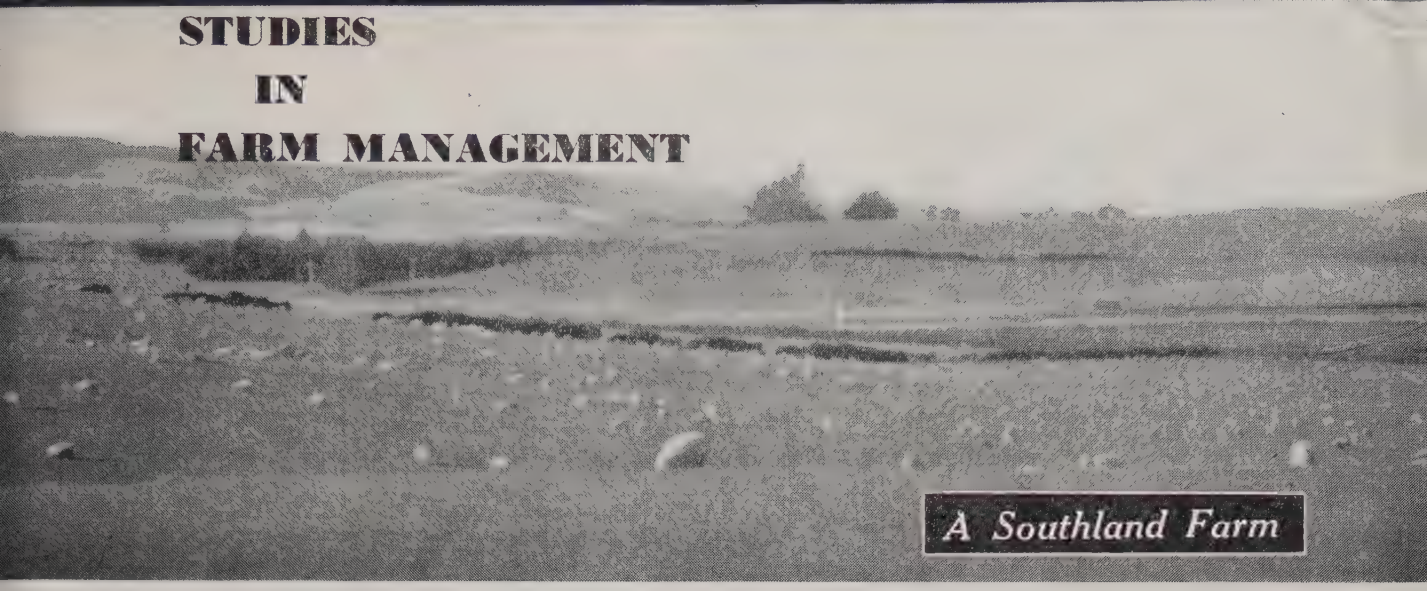


A Southland Farm

THE Southland land district includes the counties of Southland, Wallace, Fiord, and Stewart Island. Fiord County may be regarded as uninhabited, and as far as agricultural and pastoral production is concerned Stewart Island can be neglected, as the area cultivated is 698 acres out of a total area occcupied of 20,119 acres.*

TO enable readers to visualise the type of farming practised it will be necessary to consider the following figures as applied to the Southland Land District:—

	Acres.
Total area occupied ..	3,256,248
Unimproved land ..	1,857,806
Total area cultivated ..	1,398,442

It is from the area in the last-named item that the vast amount of production of meat, wool, and dairy produce is obtained. This area is made up as follows: Total area in grasses and clovers 1,247,376 acres, of which 75,104 represents young grass. A peculiar feature demonstrating the standard Southland practice is that of the latter acreage no less an area than 68,209 acres is sown out with a nurse crop. This nurse crop may be oats, lamb feed (rape or kale), or wheat.

In order to correlate the above figures with production it is necessary to quote the livestock as follows:—

Sheep (breeding ewes) ..	2,103,303
Sheep (total)	3,006,213
Cattle (dairy cows in milk)	60,813
Cattle (total)	159,495
Pigs (sows)	963
Pigs (total)	8,896
Horses	22,140

The number of sheep shorn in the Southland Land District represents 9.03 per cent. of the Dominion total, and the number of lambs tailed 11.33 per cent. These two figures when studied together indicate the suitability of the district for fat-lamb production, and compare more than favourably with any other district.

At this stage it may be opportune to describe the main topographical features of the district and the average rainfall. The main rivers of Southland, the Mataura, the Oreti, the Aparima, and the Waiau, run in a general southerly direction.

The Hokonui Hills, which separate the Mataura and the Oreti Rivers, run approximately W.N.W. to E.S.E. Between the Oreti and the Aparima Rivers there is an extensive gravel plain broken in places by undulating country derived from loess. The Longwood Range and the Takitimus farther north separate the Aparima and the Waiau watersheds.

— By —

W. L. HARBORD,
Fields Instructor, Invercargill.

The coastal portions of Southland experience an average and evenly-distributed annual rainfall of 45-50in. From Winton and Mataura northward this rainfall decreases to 35in., and at Lumsden it again decreases to 25in. per annum, with much less even distribution.

Fat lamb production is also confined to the better-class plain, river valley, and undulating country, and frequently encroaches on land that could be devoted to dairying.

Soils

Southland soils in the main are of a medium, free-working silt loam with a sandy or silt clay subsoil. Contrary to the general belief many of these clay loams, as they are generally referred to, are not true clays. The heaviest land consists of an alluvial river silt deposit with a sandy clay loam subsoil. Such land is found in the river flat Mataura Island district about 8 or 10 miles in a south-easterly direction from Edendale, and on the east side of the Mataura River. This small district is generally recognised as the most highly fertile land in the province. As it is subject to flood and receives added fertility from time to time in the form of flood deposits, some very fine crops of chou moellier, swedes, etc., are grown. The West Plains-Wallacetown district lying north and west of Invercargill has the same class of soil, but as this area does not flood it has not received the periodic increments of fertility that the Mataura Island receives.

In the above-mentioned districts the surface soil is at least 3ft. deep, and in parts a considerable amount of artificial drainage is required to keep the areas dry.

The Edendale Plain consists of river terrace land with a surface soil of 8 to 10in. A gravel subsoil is found at varying depths, ranging from 5 to 20ft. and between the surface soil and the gravel bottom is a sandy to fine gravel silt. This soil type allows easy natural drainage, and while being of the same high fertility has the advantage of the West Plains area in having a freer draining subsoil.

The district of Otahuti and the southern part of Drummond has another high-fertility soil. Here, in the main, the surface soil, which is a free-working loam, is about 8-12in. deep, with a heavier clay subsoil, although parts of this district, especially Otahuti, incline to peat. In the early days of Southland's farming history this district was noted for its suitability for cropping and today produces pastures worthy of the high fertility of its soil.

The East Limehills-Boggy Burn district, north-east of Winton and east of

*** All figures given are taken from the Statistical Report on Agricultural and Pastoral Production for the season 1941-42.**

the Oreti River, has a soil similar to that of the Otahuti district.

A different soil type is found in the Oreti-South Hillend and Aparima districts. Here the surface soil is generally of a lighter type and from 6 to 12in. in depth. The subsoil varies from a fairly stiff clay silt in parts to a gravelly clay silt.

The Dipton Flat differs from all the above-mentioned districts in that the soil depth here is from 5 to 12in. and the subsoil is of a gravelly clay silt with an extensive ironstone pan.

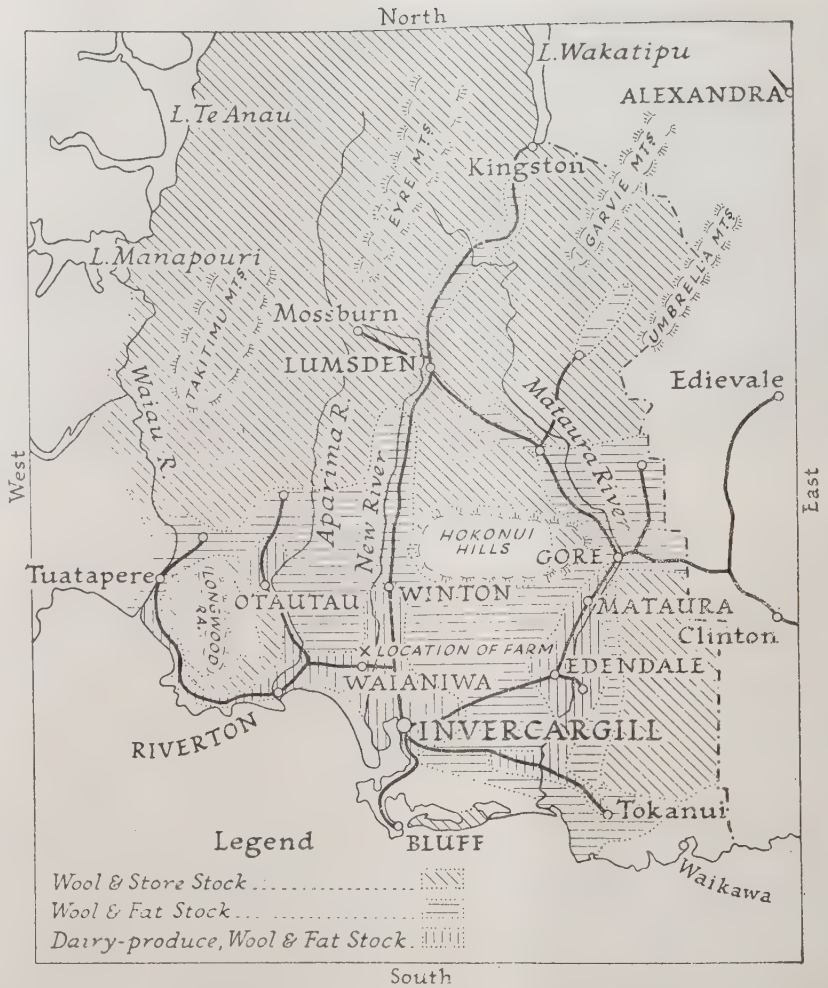
The Waimea Plain, extending from Gore to Lumsden on the north side of the Hokonui Hills, is of a gravelly light silt loam with a gravelly silt clay subsoil. Surface soil on this plain is shallow, light, and shingly, in a 25in. per annum rainfall belt.

In the accompanying map an attempt has been made to depict the typical wool and store stock country, wool and fat stock country, and dairy-produce, wool, and fat stock country.

Fat lamb farming has reached a very high standard of efficiency in Southland today, especially when it is realised that prior to 50 years ago the produce of the province consisted almost solely of grain and wool.

In the early days little was known of the results obtainable from liming on pasture establishment and maintenance. Lime was not so readily obtained then as today. However, as time went on more and still more paddocks received lime and definite results were obtained. Gradually the practice of regular periodic topdressings of lime was developed. Later this was assisted by applications of phosphatic manures and the two combined gave splendid results. Increased numbers of stock per acre were carried, and a small percentage of lambs became ready for drafting before weaning. In the earlier days pastures were not as we know them today. The cropping programme necessitated frequent ploughing of areas. As a direct result of liming and topdressing with manures pastures improved both in quality and longevity. The result was a switch towards sheep farming, especially after the first freezing works was opened during the eighties. On farms where considerable cropping has been the rule a change to more sheep and a lighter cropping programme became evident. The following figures show killings at the Makarewa, Mataura, and Ocean Beach freezing works in Southland for the period of 40 years, 1903/1942.

	Sheep and Lambs.	*Cattle.*
1903/1912	3,343,604	2,003
1913/1922	3,881,446	50,147
1923/1932	5,961,143	16,666
1933/1942	13,613,850	41,848
Forty years	26,800,043	110,664
1943	1,634,596	9,210



Today the fat lamb farm has under cultivation a minimum area only, sufficient for the production of winter and fattening feeds. How has this change been achieved?

The liming and manuring of grass paddocks gradually allowed an increase in the number of stock carried per acre. Also as pasture improvement became more marked a greater number of lambs became ready for killing as fats, directly off the mother. The actual increase of stock per acre was an asset to the soil in that increased stock droppings were returned to the land. A good, well-managed grass pasture offers one of the best means of building up soil fertility.

Today many parts of the province have soil of a high state of fertility and fat lamb farming is extremely lucrative on such areas.

Fat Lamb Farmer

How is the fat lamb farmer described?

The true fat lamb farmer is one who fattens all his lambs and who carries on a cropping programme only sufficient to produce feed other than grass for fattening and maintenance. Such farmers can be placed in one of two categories, viz.:—

1. The farmer who purchases each year a line of two-toothed ewes and breeds from them until they are four and perhaps even five years old, when they are sold in the annual draft. Such a farmer sells all his lambs fat regardless of sex.

2. The farmer who each year buys four-year-old ewes, breeds from them for as long a period as possible (generally two years), and sells them off as fat ewes. This farmer also sells all his lambs fat regardless of sex.

Such farmers breed from the Romney cross ewe mated with the Southdown ram. This cross assures quick and economic fattening of lambs. Still another style of fat lamb farmer breeds with the Romney or Romney cross Leicester ewe mated with, in

Thanks are due to the Director, Soil Survey Division, Scientific and Industrial Research Department, for data in the soil map, and to the Lands and Survey Department for drawings of maps.

either case, the Romney ram. Such a farmer buys no ewe replacements, but retains his ewe lambs and carries them over for this purpose. Also in this type of farming the practice may be to put a proportion of the flock to Southdown rams. The remainder of the flock would then be mated with Romney rams to supply sufficient ewe lambs for replacement purposes.

This article deals mainly with the facts and workings of a particular farm. While the facts given are all true records, it must be admitted that the farm and conditions are slightly above average. Also this farm cannot be taken as typical of the whole province, although it is typical of the Waianiwa district.

The district of Waianiwa where the farm is situated is within 8-10 miles of the coast and some practices here cannot be carried out further north where, for instance, frosts retard grass growth much earlier in the autumn and later in the spring.

With this point in mind, it is proposed to enumerate the main fat lamb practices for Southland generally, before dealing with the particular farm at Waianiwa.

General Southland Practice

Rams are put to Romney crossbred ewes on about April 24, and lambing consequently starts about the middle of September.

Shearing is done during the months of December and January.

Lamb feed generally consists of a paddock of young grass sown with rape and/or turnips. Frequently lambs have their teeth broken out and are fed on swede tops. Weaned lambs are generally put direct to feed rather than pasture before feed.

Dipping operations take place about weaning time, as most lambs are dipped before going on to feed.

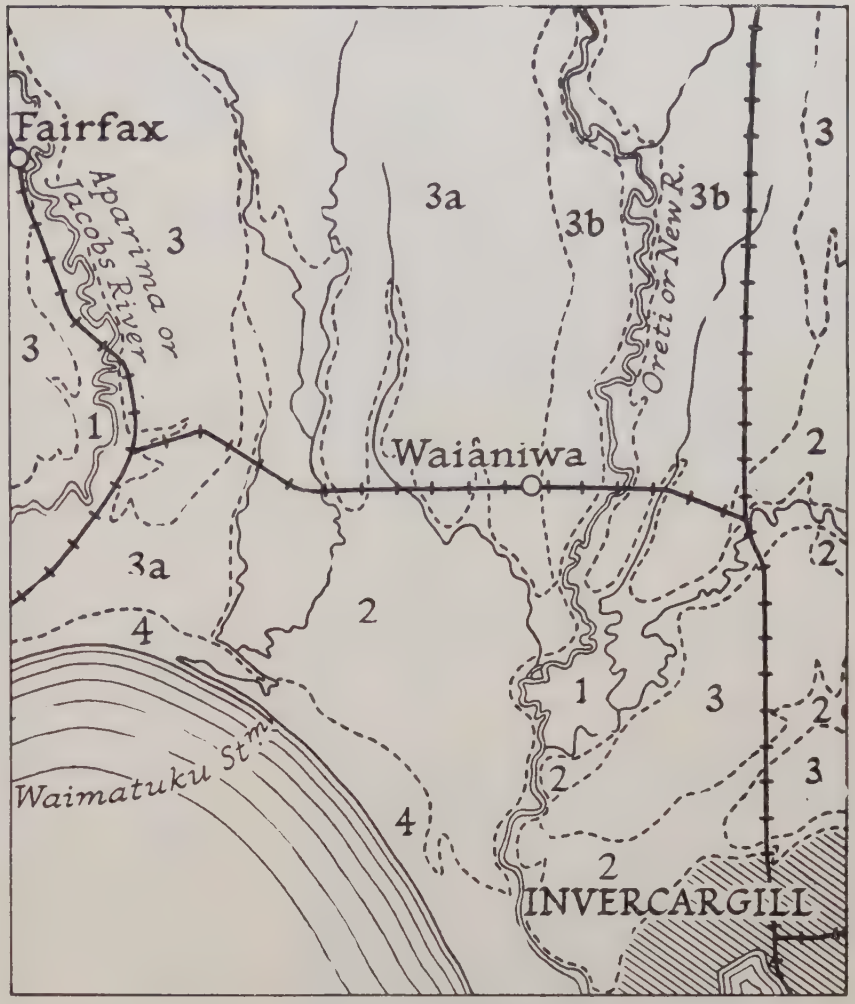
Turnip or swede feeding usually starts during late June, while some farmers begin feeding turnips by the first day of that month. Where lambing does not start until late September turnip or swede feeding persists up to that time, as grass will have shown no growth in the inland districts.

Lambing percentages frequently reach as high as 130 per cent., although the percentage of lambs marked fat before weaning varies considerably.

While the heavy land of the coastal districts will carry usually 4 to 5 ewes, and in some cases over 6 ewes per acre, the more inland districts would average about 2½-3 ewes per acre.

In regard to swede and turnip growth, heavy crops are more readily grown nearer the coast than in the inland districts. An acre of swedes is sown for each 100 ewes in Waianiwa, while in the Dipton district about 40 ewes would feed off an acre.

Spring grass growth in the Waianiwa district starts generally during early September, but little movement in grass growth is noticed before the beginning of October in the Dipton district, which is very centrally situated in the province. Dry summer weather conditions can have a serious effect on grass growth during January and February in the more inland districts. This necessitates greater areas of fattening feed, such as rape, kale, and swede tops, to put that final bloom on the lambs.



A SOUTHLAND FAT LAMB FARM.

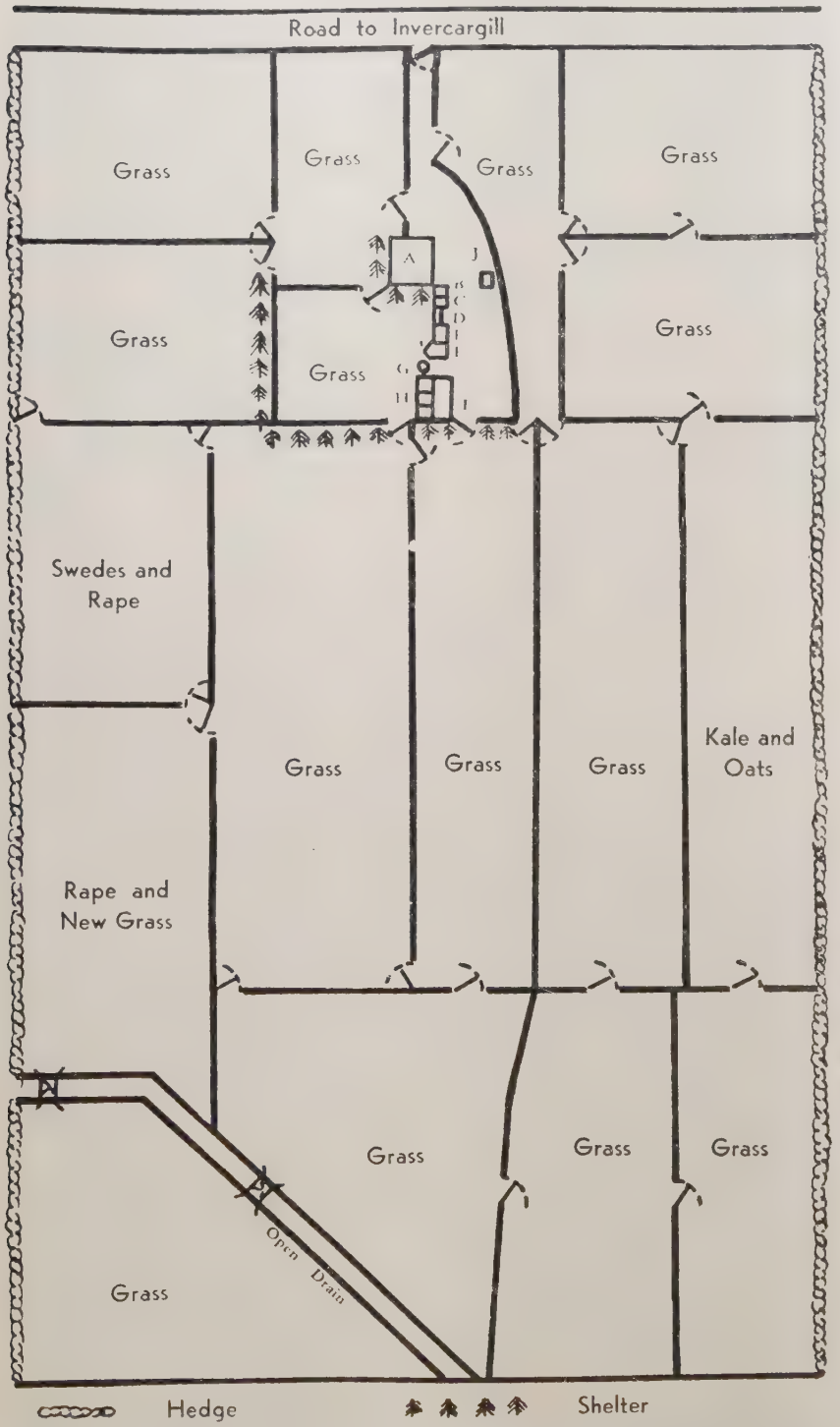
The farm referred to is of 285 acres of undulating country in the district of Waianiwa, where the annual rainfall is about 45in. Of a good clay loam, the farm has a fairly porous clay subsoil. With many successfully operating tile drains this naturally well-drained holding is kept relatively dry.

The farm is subdivided into 17 paddocks, ranging in size from 4 to 25 acres (see plan). Fences are all substantial and in good order, the majority of posts being manufactured on the farm.

The steading, which includes a modern brick and roughcast house, is situated on the highest part of the farm. It consists of a shearing shed with sheep yards and dip attached, a barn and implement shed combined, cowbyre, pump shed, and car shed, all

of which are built of corrugated iron. Also a comfortable hut to house shearers is in a handy position. The steading is well sheltered by a large belt of macrocarpa and oregon pines. With the exception of a 17-year-old lad employed as a cadet, and men for shearing, no outside labour is employed. A tractor is used for practically all cultivation and a "jogger cart," drawn by a light horse, is used for maintenance and general utility work.

PLAN OF FARM



A. House. B. Garage. C. Hut. D. Smithy. E. Farm implement shed. F. Cow byre. G. Sheep dip. H. Sheep yards. I. Shearing shed. J. Pump house.

The one draught horse on the farm has a glorified existence, as, with a neighbour's horse, it makes a pair to do the few days' scuffling and mowing that are necessary.

Mating the Flock

A flock of 1,020 Romney ewes is mated with Southdown rams on April 10. Rams are mated with 45 ewes to each ram and they are removed from the flock about eight weeks later. By doing so a guarantee can be given with any 6- and 8-toothed dry ewes sold fat to the butchers' trade during the spring.

Lambing

Lambing operations commence about September 5 and the bulk of the lambs usually arrive within 5 weeks. Tailing and marking is done when lambs are about 21 days old and the searing iron and emasculators are used. The flock has usually finished the swedes by September 1, when they are drafted out to grass for lambing. Prior to this, however, the older ewes may have been drafted and turned out to grass, leaving only the 2- and 4-toothed ewes to finish the swedes.

Two-toothed ewes are lambed as one flock, but older ewes are usually drafted to paddocks regardless of age.

Mortality and Lambing Percentages

On this farm the winter mortality is above average. During the 1942-43 season 55 ewes died, giving a mortality of 5.4 per cent. In spite of this, 1,206 lambs were tailed, giving a lambing percentage of 118.3 per cent. for the year.

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Wool Returns

The following table shows wool returns for 1941-42 and 1942-43:—

Year.	*No. of sheep shorn.*	*Total wool, including dead wool. lb.*	*Average weight per head. lb.*	*Value per lb. d.*
1941-42 ..	1,088	11,188	10.28	13.00
1942-43 ..	1,107	11,239	10.15	12.80

Shearing

Shearing is commenced during the latter half of November. Machines are used, two shearers completing the work in about 4 days if the weather conditions permit. The clip returns an average of 10lb. of wool per head.

FAT LAMB DRAFTS, 1941-42.

Number of lambs tailed	1,206
Number of store lambs bought	90
	1,296
Lamb deaths after tailing	10
Total lambs sold fat	1,286

Lambs off Mothers.

Early January draft ..	427 —	36.77 lb. per head.
Late January draft ..	589 —	35.95 lb. per head.
Total lambs off mothers	1,016 —	36.29 lb. avge. weight per head.

Weaned Lambs.

Early March draft	100 lambs —	37.13 lb. per head.
Late March draft	84 „ —	38.79 lb. per head.
May draft ..	70 „ —	35.63 lb. per head.
Early June draft	16 „ —	32.00 lb. per head.
Tl. weaned lambs	270	36.95 lb. avge. weight per head.

Total Lambs Sold Fat.

Off mothers	1,016	
Weaned	270	Average weight per head, 36.43 lb.
	1,286	

Lamb Management

The first draft of lambs "off the mothers" is picked during mid-January, when only the tops are drafted. A second draft is taken about the beginning of February, and in this draft all fats are taken for the works. As soon as the second draft is away weaning is carried out and the lambs grazed on a young grass pasture for about 2-3 weeks.

Prior to this, however, usually when the first draft is picked, the smaller lambs will be weaned and put to the grass paddock. Probably these small lambs will number 30-40 and represent the mismothered and milk-starved lambs. Such lambs do better when properly weaned at an early stage, drenched, and given good grass to graze on.

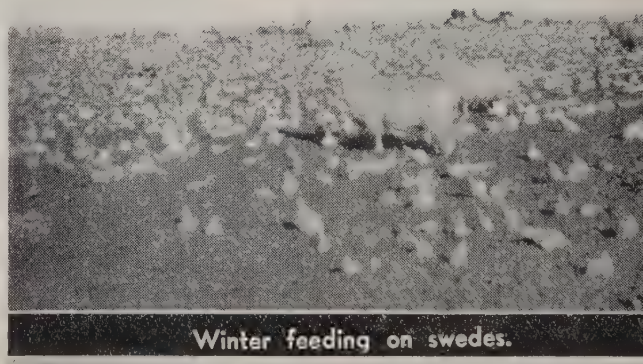
During the latter fortnight of February weaned lambs are fed on ridged rape in breaks. The rape should be ready for feeding by this time, and, as a further draft may have been taken while the lambs were on the grass, it may be decided to purchase store lambs for fattening purposes.

Such a decision depends entirely on the amount of feed available. During the year in question a line of 90 store lambs were brought in and fattened. With normal conditions prevailing the weaned lambs are usually fattened after 2-3 weeks on young grass and 3-4 weeks on ridged rape. Usually all lambs are fattened by the end of May.

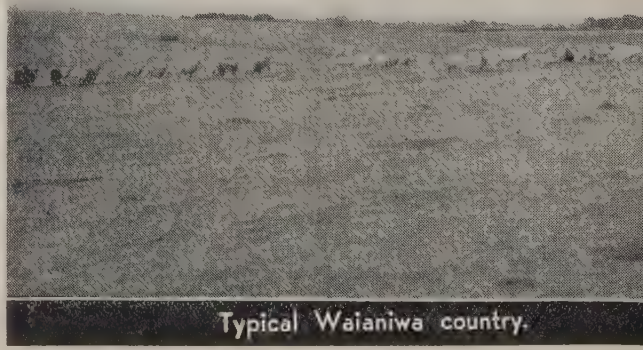
Ewe Replacements

The breeding flock is kept to an average total of 1,020 ewes and, with the annual mortality of ewes at 55, the replacements

Ram hoggets.



Winter feeding on swedes.



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required each year total about 250 2-toothed ewes which are added to the flock.

During the last 10 years these young sheep have been bought from the same run country station as two-toothed ewes "off the shears." This sale is effected during late December just after the station shearing is finished. Although on the small side when purchased, they respond to ample good feed and the change of conditions, so that by lambing time they prove to be well-built, hardy stock. Making this purchase each year from the same station ensures the maintenance of a good even line of ewes.

During late February the flock is culled. Culling is mainly decided by the condition of the teeth and general constitution of the ewe. A ewe is removed from the flock only when it is decided she will not stand another season rearing a lamb. This practice means that good four-year-old ewes are carried on for another or perhaps two years before they are eventually culled out. Such a ewe when eventually culled is fattened for sale to the fat ewe market. Normally, however, a line of ewes culled at four years would number 150, and these would be put to the Southdown rams and sold as "in-lamb sound-mouthed ewes" during August. If the fat stock market is sufficiently tempting, they might even be sold as fat ewes during June, but such is not the usual practice.

Ram Replacements

Rams are always bought as 2-toothed rams off the shears, and the annual replacements average 7-8 rams. When purchasing rams consideration is given to the type of wool, and only good rams are bought. The rams bought are Southdowns and they are not kept for more than 4 seasons.

Ewe Hoggets

If sufficient feed is available in August, up to 150 ewe hoggets may be bought and carried through the summer to be sold as a line of 2-tooth ewes during the following March. Such a practice is not carried out every year, and a decision to buy is made only after the available feed and nature of the markets have been given consideration. A line of hoggets bought has generally returned a wool clip of about 9lb. weight per head.

Cropping

The main crop is undoubtedly grass. Without good grass pastures the percentage of fat lambs sold "off the mothers" would not be achieved. Neither would the carrying capacity per acre be maintained at such a high figure. Hence the aim is to sow down the very best pastures and to keep them up to a high standard for as long as possible. Although there are only 17 paddocks on the farm, some of them have been in good grass for as long as 18 years. One recently ploughed was 25 years old.

Usually 16, and seldom more than 18, acres are broken up from lea each year. The sequence of crops grown after pasture until resowed to new grass is roughly as follows:—

Winter 1941 — 16-18 acres grass ploughed.
Spring 1941 — 12 acres swedes; 4-6 acres ridged rape.
Spring 1942 — 12 acres kale; 4-6 acres oats.
Spring 1943 — 16-18 acres rape with young grass.

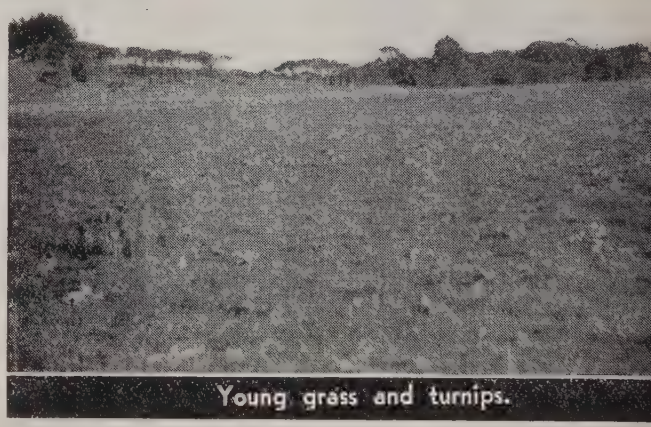
A paddock to be broken out of lea would be one not giving the required percentage of fat lambs "off the mothers" nor the required amount of grass growth during a season.

As grass growth persists so is lea ploughing delayed. It is, however, usually completed during July, when a furrow of 7½in. is turned.

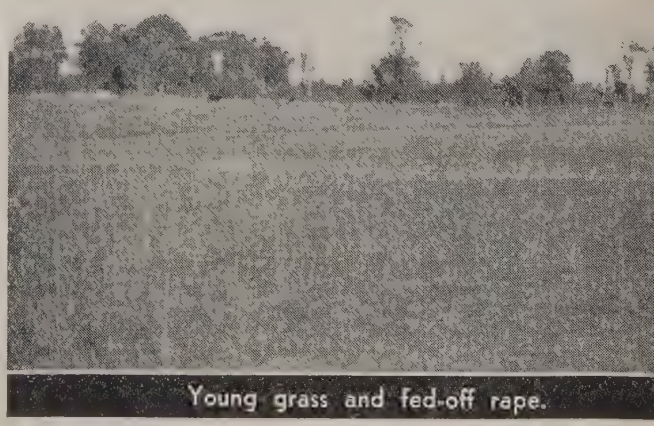
At about the end of August, or as soon as the ground is sufficiently dry, the first of three double cuts of the tandem discs is given. The final double cut is a still lighter one, and this is given just prior to sowing. This final cut is given with the tine harrows drawn behind the discs.

By this time—first or second week in November—12 acres of the ground is sown in Wilhelmsburger (Resistant) swede on the unrolled ground. The seed is sown through the ridger at the rate of 8oz. per acre. With all crops the available quantity of rationed fertiliser is sown. At least two strokes of the scuffler are given before the crop is big enough to prevent scuffling operations. No thinning operations are carried out.

A Southland limeworks.



Young grass and turnips.



Young grass and fed-off rape.

The remaining 4-6 acres of ground is sown in ridged Broad-leaf Essex rape, with 2lb. seed per acre, either immediately before or after the swedes are sown, and the crop receives the same scuffling treatment.

Second Crop

The programme for the second crop on the above-mentioned ground is as follows: During October the ridged rape ground (4-6 acres) is drilled with Gartons Onwards oats at the rate of 4½ bushels per acre. This crop is binder cut and stacked for chaffing purposes, usually by the end of February.

With the swedes eaten off by the beginning of September this ground (12 acres) is ploughed, disced, and prepared for a crop of ridged kale or chou moellier and sown at the rate of 2½lb. per acre during late November.

Feeding of this crop starts about the second or third week in May, and usually is finished by the beginning of July. By this time the oat stubble has been ploughed and the kale ground is ploughed during August, all in preparation for sowing down to grass during early November.

Sowing Down to Grass

The usual grass mixture sown is as follows:—

	lb. per acre.
Cert. perennial ryegrass ..	15
Uncert. perennial ryegrass ..	15
Italian ryegrass	10
Timothy	4
Cocksfoot	4
Dogstail	½
Cert. Mont. red clover	1
Cert. white clover	2
Total	51½

The above is sown with rape at the rate of 2lb. per acre in 14in. drills.

After a ton of carbonate of lime per acre has been applied to the already well-prepared tilth the roller is put over the paddock, when it is then ready for sowing. The grass is sown with a nurse crop of rape. Both grass and rape are sown together, using a drill with a grass box attached. Superphosphate at 2cwt. per acre is applied with the seed. With the paddocks sown in grass an attempt is made to topdress with 2cwt. superphosphate per acre during the first year and 15-20cwt. lime every third year.

Feeding the Stock

As grass growth usually persists in a gradually lessening degree until about the end of June, the ewes are not fed on swedes until that time. Careful conservation of this feed has to be practised to ensure a food supply other than grass until lambing time, which begins during the first week in September. By using light stakes and sheep netting two breaks are fenced off, each break being about 1¼ acres in extent. The ewe flock, which at this time of the year consists of 1200 ewes, including the cast ewes, is divided into two flocks and each is fed on one of the two breaks of swedes. This practice conserves the feed, as a large flock of 1200 ewes on a small break, especially in wet weather, would waste as much, if not more feed, than would be eaten. As feeding usually continues until about September 1, it means the 12 acres of swedes have to last for 8-10 weeks.

About 30 open sheep feeders are kept maintained and while on swedes the ewes are also fed with chaff at the rate of ½ to 1lb. of chaff per head per day.

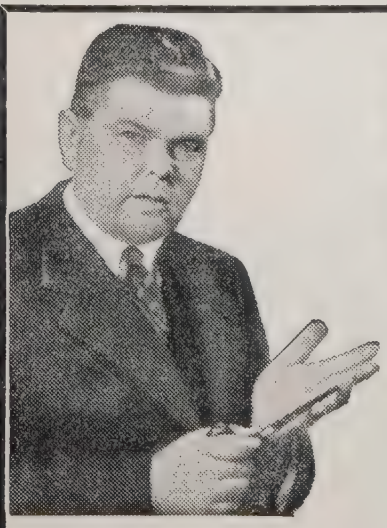
Dipping the Stock

Each February and shortly after weaning the ewes are dipped. The dip is in a handy position to the shearing shed and is of the more modern type and capable of holding 4 ewes at a time.

Drainage

With inadequate drainage the farm would soon revert to an unpayable proposition, as the paddocks on parts of the farm would become covered with rushes and other weeds which offer little in the way of stock feed. Crops such as swedes, rape, and oats would not thrive, and the yields obtained would become smaller each year. Hence the constant need to keep all existing drains and outlets in good working order, and periodically to make use of the mole drain plough on whatever parts of the farm there is evidence of need for its use.

The farm has no open drains, but the length of tile drains would aggregate



BAD LUCK!

I've recently got some most astounding and revolutionary information from America, on new methods of farming, which concern you. It's darned bad luck—but unfortunately this Journal has not sufficient space for me to even give you a rough outline of what it's all about.

★★ Will you please make it your business to read my advertisement in the September issue of the "DAIRY EXPORTER," "STRAIGHT FURROW" or "FARMER WEEKLY"—I promise you you won't be disappointed.

"BEVIN" Harrows and Electrofencers are selling like hot spuds!—I'd like to add YOUR name to the list of many thousands of satisfied users. The first step to that end is for me to send you full particulars for which you will find the attached coupon convenient.

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Please send me particulars of your
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(Strike out which not wanted.)

And a Copy of your MONEY-BACK GUARANTEE.

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..... J.A. 15/9/44

several miles. Today the farm is so well served by existing tile drains that it is thought unlikely any new ones will be required for some years, and the mole plough is sufficient to keep hollows and faces dry. No regular period of the year is set aside for mole ploughing, the work being done whenever it is thought necessary, and of course always before a lea paddock is to be ploughed. A 2½in. plug is usually used. On the majority of farms in Southland the mole ploughing is done not in mid-winter, when the ground is soft and water-logged, but rather when the ground is drying out in the spring, or in the autumn, when the soil is becoming moist after the dry spell. On the farm concerned mole drains are always connected to tile drains.

Ailments of Stock

The amount of trouble caused the farmer by stock suffering with either footrot or scald varies with the seasons and growth of grass. Although footrot is due to a germ with which the soil becomes infected, the prevalence of the disease from year to year depends to a larger extent on the climatic conditions and the nature of the paddock cover. In Southland, particularly on the heavier-producing farms, footrot causes more than enough trouble and loss each year, and carefully carried out precautionary and curative measures are followed. On the farm in question sheep are put through a foot-bath or race containing a solution of formalin. When the treatment is for scald only the stock are put through the same bath filled with dry builder's lime and then held on the grating of the wool shed for half a day.

Pre-War Manuring

Although fertilisers are rationed at present, it is thought that the manures and quantities applied with various crops would be of interest to readers. The following shows the more or less customary procedure followed by the Southland farmer in pre-war days.

Crop.	*Manure.*	*Quantity per acre. Cwt.*
Turnips or swedes (ridged)	Reverted super	3
Turnips (flat)	Reverted super	2-3
Kale or rape (ridged)	Reverted super	3
Chou moellier (ridged)	Super or blood and bone (topdressed before sowing)	2
	Reverted super sown with seed	3
Oats (on heavy land)	Superphosphate	2
	Potassic super	2
Wheat	Superphosphate or reverted super	3
Grass and rape	Super	2

The practice of liming varies from farm to farm but as indicated previously lime is used widely and has been one of the main factors of high production in Southland. Some farmers apply up to one ton per acre prior to sowing swedes, others may apply lime to swede ground and again prior to sowing grass. Owing to the high demand for lime and the restricted suply, lime is now rationed to the following:—

	Cwt. per acre.
Forage crop	10
New grass	10
Other crops	2
Topdressing	4

The farmer concerned was asked to what he considered the success of his fat lamb farming was due. He replied that it was due to carrying every possible head of stock during the summer, or months of grass growth, by feeding the stock successfully on the least possible acreage of winter feed, and most important of all, careful establishment and management of pastures.

Undoubtedly this is true, for as soon as the fat lamb farmer neglects his pastures, either in the establishment or managment of them, then he has lost the basis of successful fat lamb farming. By increasing the quality of the pasture so is the carrying capacity per acre increased.

"it has TAILED over 13,000 LAMBS

"and has never gone better than now.

"NO DEATHS after tailing and lambs fatten "quicker. Last year we drafted 2035 fats from "1840 ewes, of which 1222 were drafted on "17th December."

The above is from a letter from Mr. Walter Clark, of Woodlands, Otara, R.D., who authorises its publication. Mr. Clark's experience is in line with hundreds of other farmers, who find this new, bloodless, humane method of docking with the

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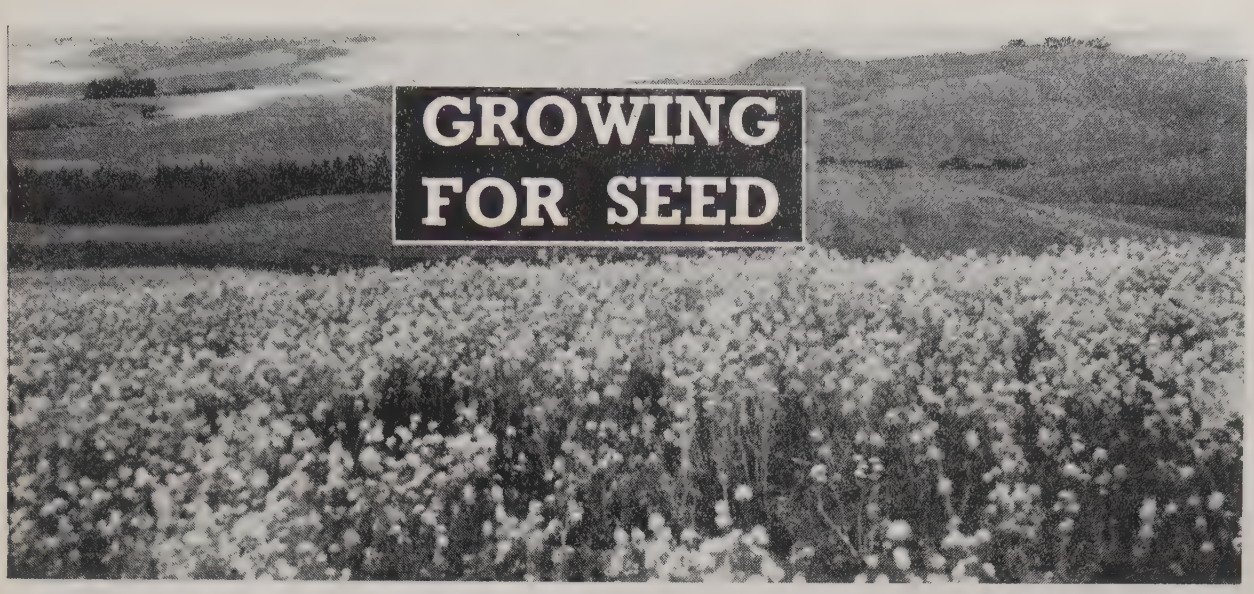


Turnips and Swedes

Over the years New Zealand farmers have been almost entirely dependent on Great Britain for supplies of turnip and swede seeds. Odd lots of seed have been produced locally from time to time, but such seed has generally been regarded with suspicion. There has been some justification for this attitude to locally-grown seed in the past. Suspicion has been based on the known difficulties in maintaining type purity in these seeds and the fact that in some of the seed produced no regard had been given to proper isolation of the area from flowering crops of other brassicas.

— By —

J. H. CLARIDGE,
Seed Certification Officer,
Wellington, and

J. O. WALLACE, Fields
Instructor, Dunedin.

FOLLOWING the fall of the greater part of the Continent of Europe to the enemy it became apparent that regular supplies of turnip and swede seed through British channels could not be expected. In view of the importance attached to the turnip and swede crop New Zealand was faced with the position of having to arrange for the production of its own regular requirements of these seeds.

In the past individual farmers have endeavoured to find a place in the market for New Zealand-grown seed, and subsequent enquiries as to the quality and yield of the root crops from such seed, together with information obtained from systematically-conducted trials, all went to show that, provided proper care and attention were given, locally-produced seed could give equally as good results as the imported article. Many growers considered that the germination of locally-grown seed was better, and that the growth was more vigorous in the early stages. No apprehension was therefore entertained that quality seed could not be produced.

Seed Production Problems

The main problems to be faced in the production of brassica seeds generally, apart from those associated with the practical growing and harvesting of the crops, are, firstly, the supply of suitable selected seed for the sowing of areas to produce commercial seed; secondly, the necessity of adequate isolation both between crops of different varieties and from other brassica crops, and, thirdly, some regulation of the total quantity of seed being produced.

The first point is of utmost importance if the type and purity of the seed are to be maintained. Rogueing of the seeding crops to remove plants of other varieties and species is of some assistance in this respect, but the work is laborious and, in most cases, does not remove the real cause of the trouble. Careful selection of the seed for sowing the commercial crops eliminates the necessity of most of the rogueing, and at the same time results in a far more satisfactory job.

The adequate isolation of crops is essential to obviate any risk of cross-pollination. Fertilisation of brassica crops is carried out largely by the honey bee, and while the degree of isolation required to eliminate the risk of cross-pollination will vary under different sets of conditions, it is considered that crops of different varieties should be isolated by distances of at least half a mile, and preferably more.

The question of the total amount of seed being produced is important when it is realised that the whole of New Zealand's requirements of some varieties can be grown on 20 acres or less. Further, there is no alternative outlet—other than as bird seed at an extremely low price—for any seed produced in excess of sowing requirements.

None of these factors comes within the control of the individual farmer, and the Department of Agriculture, realising this, and also the great desirability of an independent approval of the seed produced, arranged in 1940 for the production under departmental supervision of twelve varieties of turnip and swede seed.

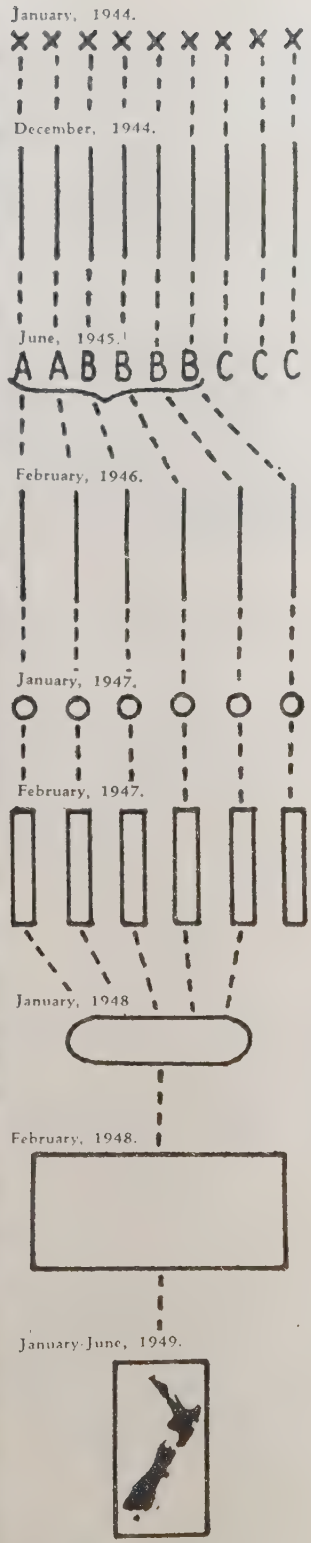
"Government Approved" Seed

In order that all the factors mentioned above might be met in as simple a way as possible it was arranged that one mercantile firm should arrange for the commercial production on contract with farmers and for the distribution throughout the seed trade of the local requirements of turnip and swede seeds. The Department undertook the tasks of raising the selected lots of seed for sowing the

Conditioning single plants.

The trial grounds.

What inspection reveals.



Seed is saved separately from a large number of plants.

Portion of the seed of each selection is sown out in a separate row in the trial ground.

Plots are inspected and grouped as: A—outstanding, B—good average, retain; C—below average—discard.

Balance of seed from the retained selections is sown out for seed production.

Seed from each row is harvested and threshed separately.

The seed from each row is sown out in a plot for further multiplication.

After eliminating any plots which show variation during growing the seed from the balance is harvested and threshed together.

The stock seed so produced is sown out under contract by farmers to produce commercial seed crops.

Commercial seed crops are harvested and the seed machine-dressed, packeted, and distributed as "Government approved."

Selected units being multiplied.

Harvesting selected units.

Second stage of multiplication.

Harvesting increase plots.

The commercial seed crop.

The packeting room.

commercial areas and of supervising all phases of the production of the seed for distribution into commerce. This supervision culminates in the recognition as "Government approved" of the seed which complies in all respects with Departmental requirements.

The various phases of the programme undertaken by the producing firm under Departmental supervision include the original selection of the areas for sowing, having regard to the suitability of the land and the district and to the isolation from other brassica crops, the inspection and rogueing of the crops to remove off-type material, and the threshing, machine-dressing, and packeting of the seed to obviate any admixture occurring during these operations. The Department also supervises the costs of the producing firm, and approves both the price paid to the farmer and the wholesale price charged to merchants, in order to assure that the sole right of production under Departmental supervision which has been given to one company is not misused. It is apparent that under such an organisation a higher degree of attention to all aspects of production with a minimum expenditure of effort can be given than could otherwise be the case.

It was realised at the commencement that it would take some time to build up selected stocks of the main varieties and to define the most satisfactory districts and methods for large-scale production. An attempt was therefore made to meet the immediate demand for seed to sow during 1941 by requesting farmers to retain for seed any surplus areas of roots originally intended for grazing. While the yield from these areas was, in a great many cases, disappointingly low, sufficient seed was nevertheless obtained to bridge the season, which otherwise would have been short of supplies.

All crops offered by farmers were carefully inspected, and on close examination it was found that the purity of hardly any of the crops offered was up to the official conception of purity from a seed-production aspect. This meant that these crops had to be very closely and systematically rogued, both during the winter and at flowering time, for the removal of foreign and off-type material. This involved a very considerable amount of time and labour.

Stock Seed Raising

Realising that a policy of retaining seed from reserved areas of forage crops for further multiplication would, if continued, result in deterioration in the quality of the succeeding root crops, a procedure was determined for the raising of the stock seed required for the sowing of the commercial areas. The present aim in this work under wartime conditions is to ensure that the commercial seed marketed as "Government approved" is at least comparable in all respects to imported seed.

The principle which is being adopted in connection with the raising of stock seed for sowing the commercial seed areas is that known as "progeny testing." This principle is the same in relation both to animal and to plant breeding. The dairy cattle breeder knows that the only measure of a bull for milk production is the results which are obtained from his progeny. It is not sufficient for an animal to be perfect in itself. It must have the ability to pass its high quality on to the next generation. It is exactly the same with plants.

Perfect show specimens of a particular variety of turnip may be chosen, but this is not sufficient to ensure that when seed from such bulbs is grown the resulting crop will be of the same high standard. Thus a system of progeny testing of single plants has been adopted for raising stock seed of turnips and swedes.

The method employed is to select a number (say 100) single plants from the purest seeding crop available. The seed from each of these plants is saved separately and portion of each lot is

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sown out into a trial ground at the usual time to produce a bulb crop. As the bulbs develop the various lines are inspected. The lines which are poorer than the average are noted for discarding; of the remaining lines any outstanding ones are also noted.

The balance of the seed from the lines being retained is then sown out, each in a separate row, for seed production. At harvest further single-plant selections are made from the lines which were outstanding in the trial and the process of testing of these is repeated. The seed from each row is harvested separately and a portion again subjected to testing, the balance being sufficient to sow a fair-sized plot in the next autumn. These plots are again harvested for seed after eliminating anything which is not breeding true in the second generation. The produce of these plots is usually sufficient, when blended into one line, to sow the whole acreage required for commercial seed production in the subsequent season.

In order to augment the supply of initial material bulbs may also be taken from the outstanding lines in the trial ground and transplanted into a seeding crop where the seed from each is retained separately for further testing and multiplication.

The whole process is repeated each year in order to maintain the supply of fresh reselected stock seed.

In addition to the foregoing procedure the selections of those varieties which claim resistance to clubroot disease are tested out on disease-infected soil and a further elimination is made of those selections showing any tendency to develop clubroot.

By the adoption of these methods it is not uncommon to discover a particularly good plant the progeny of which may be producing, for example, a proportion of green-skinned bulbs instead of all purple. Such a selection is completely eliminated before it is mixed with others. Were progeny testing along these lines not undertaken, the entire produce of such a plant would be lost sight of in being mixed with other seed, and consequently, in each stage of multiplication, heavy rogueing would be necessary to remove the green bulbs **without ever** eliminating the actual source of the trouble.

While in practice the steps taken might vary slightly from variety to variety and from year to year, the accompanying diagram shows pictorially the general procedure adopted.

Production of Commercial Seed

The production of the commercial seed is of very direct interest to those farmers taking up seed-growing contracts. At the commencement no direct evidence on the subject was available from overseas and views and opinions differed as to how, where, and when the seed should be sown. It was agreed, however, that the whole programme of production should be confined to the Otago and Southland districts, in order to avoid overlapping with other brassica crops being grown in different parts of Canterbury. Sowings were made at various times of the year—from spring onwards to early winter. Rates and methods of seeding were varied and areas were chosen over a wide range of soil types and climatic conditions. These aspects are now more or less clarified and the experience gained indicates that the essentials set out below should be adopted in order to obtain a payable yield with reasonable assurance.

Strange as it may seem at first glance the regions most suitable for the production of heavy yields of roots are not at all suitable for seed production. In such regions disease can severely affect the crop as the seed stalk growth develops, both in regard to yield and also in regard to infection of the seed, while the climatic conditions during harvesting are not reliable for the production of well-conditioned seed.

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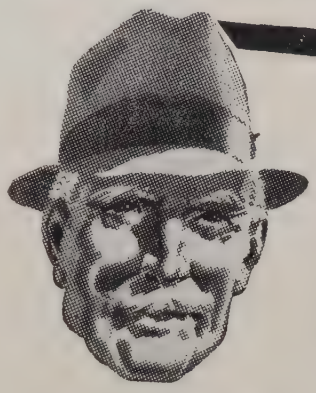

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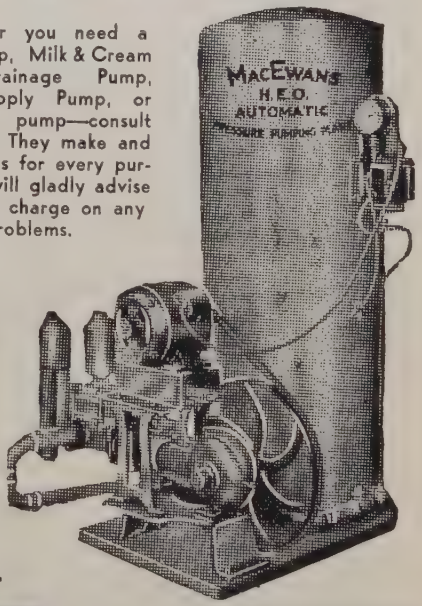

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Good leaf cover in winter is important.

On fertile, well-drained land snow is not harmful.

A good density of plants.

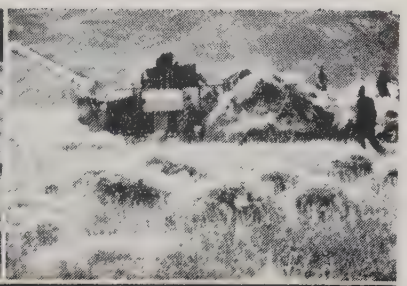
Dry rot causes breaking of flowering stalks.

Rogueing at flowering stage.

Prospects of excellent yield.

Several small stacks are preferable to one large one.

Header harvester threshing from the windrow.



Threshing binder-cut crop direct from paddock.

The bulk of the crop is now grown on the higher inland regions where the winter conditions are cold and the summer hot and dry. In these regions roots are not grown for feed to any extent and dry-rot and clubroot diseases are rarely encountered. These diseases are apparently controlled by the climate, a desirable achievement in the production of this class of seed. In general, provided the type of soil is suitable, the Hawea Flat and the Lakes districts of Central Otago, the Greenfield-Clydevale district of South Otago, and the Lumsden-Garston district in Southland are proving most suitable, particularly for the production of swede seed. It has been found that turnip seed growing can be carried out under a wider climatic range, however, and areas northwards of Winton in Southland and in pockets elsewhere are giving good results.

Suitable Land and Tillage

A good, free, fertile, deep loam in a sheltered situation, well drained and ploughed out of lea, is to be preferred. Sowing immediately after the harvesting of a white crop almost invariably leads to failure. The land should be ploughed reasonably deep in the early winter and let lie to the weather. During the summer the land should be disced, cultivated, and harrowed at intervals, thus forming a fine seed-bed. Cultivation also brings about the destruction of weeds and helps to conserve the soil moisture, an important aspect in the establishment of the crop, as sowing is done during a normally dry period of the year.

Sowing of Seed

The actual date of sowing will, of course, vary with the district and the season. It should be done at a time which will allow the plants to become well established with a good cover of leaf and having roots about 1 in. to 1½ in. in diameter before the early winter frosts set in. If sown too early, the plants become dormant in the winter and lose their leaf cover, which invariably results in a high death-rate through frosting of the roots.

Swedes and yellow-fleshed turnips are slower in growth than white-fleshed turnips, and consequently should be sown earlier. As a guide for the districts in which these crops are being grown under supervision the former should be sown during the last week of January to the second week of February, and white-fleshed turnips from the second to the last week of February. An essential feature in obtaining a good strike is to sow shallow, not more than ½ in. deep, on a well-consolidated seed-bed. In almost every case of a poor strike the failure can be attributed to sowing too deeply in loose soil.

A good density to help the plants over winter is required, but the crop should not be so dense as to bring about a starved, spindly condition when the crop reaches the flower stage. Here again personal judgment must be exercised, taking cognisance of prevailing climate and soil conditions.

Swedes sown at 4 lb. per acre and turnips at 3 lb. per acre in 7 in. drills have given satisfactory results. Sowing in more widely-spaced drills to allow of intercultivation and early spring manuring may result in the production of seed of larger size. The effect on the yield of seed per acre is not known, however, while the practice would entail the expenditure of additional labour. On the other hand trials carried out to date indicate that there is no difference in the bulbs produced from large and small seed respectively. The full ration of manure should be used to assist in establishing the crop, though the plants really require the maximum amount of food

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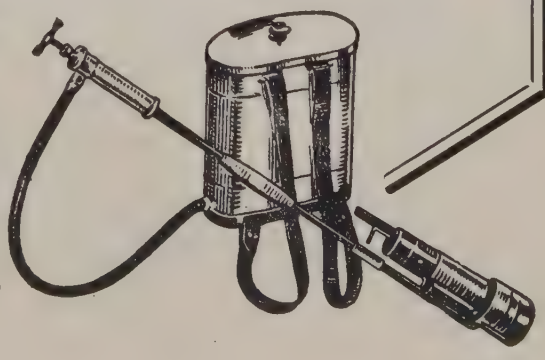

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when the seed-bearing growth comes away in the spring. A topdressing of a quick-acting nitrogenous manure at that time would no doubt be beneficial. However, this is not available under present conditions, and as the supply of phosphate and organic manure is limited, it is all the more essential that for the production of quality seed the crop should be grown on fertile land. Particularly is this so in the case of swedes, which demand more exacting soil and climatic conditions than do turnips.

Harvesting

Harvesting commences in late December and proceeds into January. Observations should be made at frequent intervals to determine the correct stage to cut, as a few days of really hot, dry weather will cause the crop to mature very quickly. If cutting takes places too early, the seed is reddish in colour and inclined to shrivel, while, if delayed too long, there is considerable loss through seed shedding. If, when looking over the top of the crop from a short distance, the colour is that of a hare's back, while the underpart of the seed pods is turning a reddish-brown, and the majority of the seed is mottled-green to reddish-black in colour, the crop may be considered ready to cut.

The method of harvesting is governed by the prevailing conditions and the facilities available. The advent of the header harvester and its popularity have modified the old-time procedure of cutting with a binder and threshing out of stook or stack. In a year with a wet summer when maturity has been slow and seed stalks contain an excess of sap it is still beneficial to stack or stook the crop, however.

When binder-cutting check over the binder before going to the field. Canvases should be in good order with the battens down tight, otherwise trouble and resultant delay will be caused by seed stalks passing in between the canvas and the battens. A canvas sheet attached below the binding table will collect a considerable quantity of seed which would otherwise be lost. One of the packers should be removed and adjustment made to tie a fairly loose sheaf. The use of a rotary shedder is a great help. Leave a high stubble, as this helps to support the sheaf off the ground. If it is decided to stook the crop, this should be done immediately following reaping. Make small stooks so that each may be lifted intact by forkers on either side lifting in unison. The tearing apart of a stook causes the loss of much seed. Threshing from the paddock can commence about 10 to 14 days after reaping if the conditions have been hot and dry. Should rain have fallen in the interval it is as well to examine the sheaves, as mildew can rapidly develop on the under side if close to the ground, in which case turn immediately.

If it is intended to stack the crop and the weather is settled, there is no occasion to stook, and under normal conditions stacking can commence two to four days after harvesting. An appreciable amount of good seed will be saved by covering the vehicles with sheets and always lifting the sheaves head uppermost. Small stacks with a diameter of 12 ft. to 14 ft. are preferable to large stacks. Do not build a high heart as there is a tendency for shed seed to trickle down the sloping seed stalks and become lost. Top off the stack with a copious amount of straw and cover the crown with a bag sheet. Leave the crop in stack at least six weeks before threshing.

In the drier regions the bulk of the crop is cut and allowed to lie loose on the stubble, to be picked up later with the header harvester. If the crop is tangled or lodged, the mower is used for the purpose, but in a well-standing crop of medium height the binder, with its binding mechanism disconnected, makes a very satisfactory job. In some instances the header harvester is used to thresh crops in the sheaf when it is moved to numerous sites in the field and the sheaves in the vicinity brought in on large sheets attached to a harrow drawbar or pole.

To avoid loss of seed the crop should be handled as little as possible at all stages, and a further advantage is to cut in the early morning or late evening when dew is on the crop. The tendency of the pods to shatter when moist with dew is greatly reduced, resulting in the saving of amounts of seed that may be sufficient to pay all the harvesting expenses.

Threshing

Quite irrespective of the type of machine used in separating the seed very careful attention should be given to the adjustment of the threshing mechanism. Far too frequently neglect of this point results in much damage being done to the seed with resultant loss to the grower.

Damage to seed often occurs as the result of concern by the grower to make a clean sample in the field. This is not necessary, and in actual fact a small admixture of inert matter—broken pods, etc.—is often an advantage to offset any tendency of the seed to heat. Inert material is readily removed during machine-dressing, but split seed is most difficult and its removal is associated with the loss of sound seed which would otherwise be retained. Often there is too strong an incentive to put the crop through the thresher too fast and to thresh too closely. When properly conditioned the crop is easily threshed, thus speed should be reduced. As an initial guide the speed rated for the threshing of peas can be taken. In all instances open wide the concave and, if of the beater type, remove alternate beaters. With a peg drum it may even be necessary to remove some of the pegs.

General

Yields of both turnip and swede seed in excess of 1,000 lb. per acre have been obtained, but the general average has been much below this figure. One very satisfying feature is that the average yield per acre has increased each season. The crops harvested in the 1944 season average almost 250 lb. per acre, though when the areas for these crops were selected in 1942 information was available from the results of only one season's crops sown specifically for seed production. The crops at present in the ground appear even more promising, and given moist, warm conditions in the late spring and early summer, good yields can be anticipated.

Pig Industry Broadcasts

UNDER the auspices of District Pig Councils broadcasts will be delivered in October as follows:—

Auckland—1YA, on October 18, at 7.15 p.m., "Feed Supply for Second Litters," by H. H. Preston, Supervisor, Northland District Pig Council.

Dunedin—4YA, on October 9, at 7.15 p.m., "Care of Young Pigs after Weaning," by M. Roderique, Supervisor, Otago-Southland District Pig Council.

Palmerston North—2ZA, on October 17, at 8.30 p.m., "Feed Supply for Second Litters," by L. Marsdon, Supervisor, Wellington District Pig Council.

Napier—2YH, on October 12, at 7.30 p.m., "Breeding," by I. H. Owtram, Supervisor, Tairawhiti District Pig Council.

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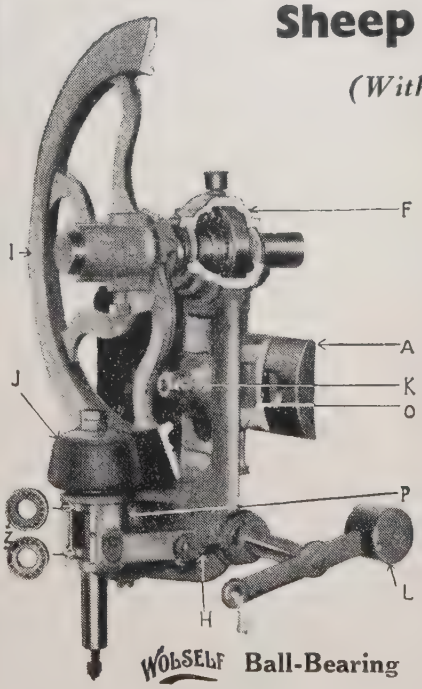

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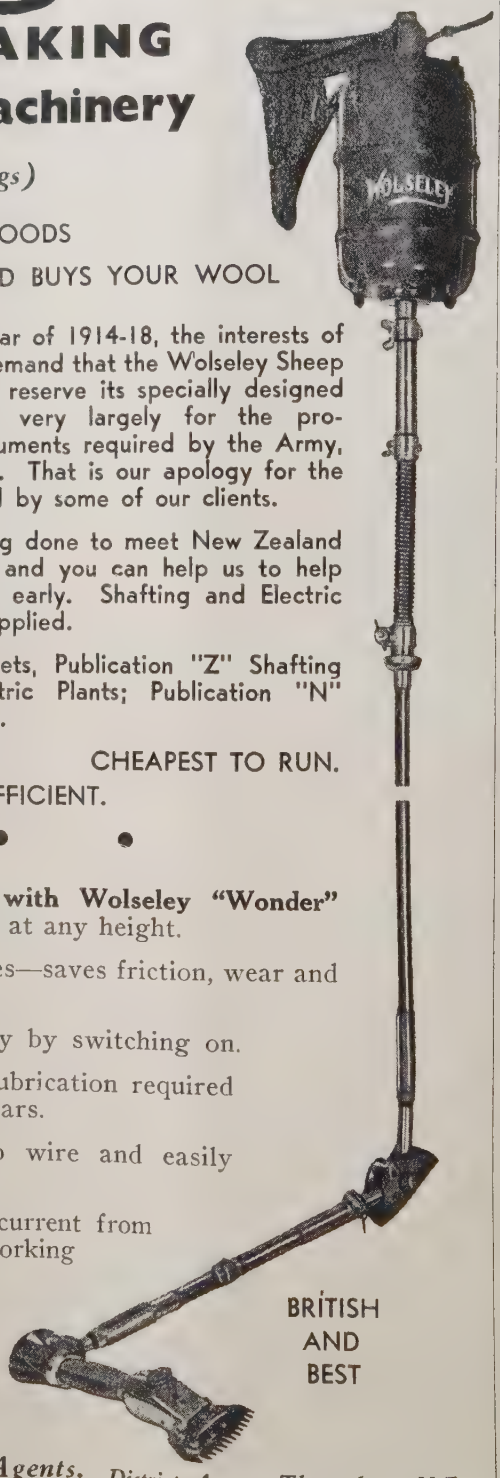

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SHEEP shearing machinery in use in New Zealand comprises shafting plants, electric plants, and portable plants, by far the largest number being included in the first category.

SHAFTING PLANTS.

The various makes of shafting plants have much in common, although they differ in a number of points of design, and as lubrication is one of the principal requirements of the overhead gear in the shafting plant we shall deal with that point first.

Lubrication

SEVERAL important points must be noted: first, the quality of lubricant, either oil or grease, as it must be remembered that there are many grades of the different lubricants on the market, and oil that is used over and over again for long periods must not be of a type that will break down. Therefore, keep strictly to the lubricants recommended by the makers of the machinery used.

Take particular care to keep the covers on all containers of grease, as in the woolshed particles of grit can easily find their way into open tins of grease, and this will certainly lead to trouble in bearings, more especially ball-bearings. An important point to remember in greasing ball-bearings is not to pack the bearings tight with grease as, strange though this may seem, it will cause the ball-bearings to run hot as the grease expands under pressure. Generally, the casting containing the ball-bearings should not be more than half or three-quarters filled with grease, the only exception being where the design provides for the grease having an outlet and being used over again in another part of the machinery.

Wick-feed System

In the early days of sheep shearing machinery wick-feed lubrication was the method adopted. By this means the oil is siphoned by a wick from a reservoir in the main overhead bearing to the bearing surfaces, and thence to channels in the lower half of the bearing, afterwards being led by a pipe through the tension plate to an oil reservoir in the friction arm, where another wick leads the oil to the fast-moving friction spindle, which usually revolves at a speed of 3000 r.p.m., or more.

The main attention necessary in this type is to see that the oil reservoirs are kept filled and clean, and that the wicks are renewed periodically. After a few years the wicks become sodden

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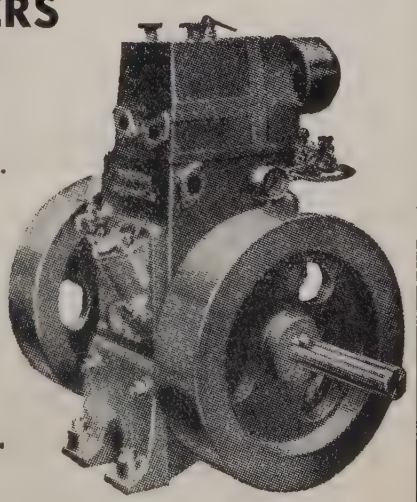

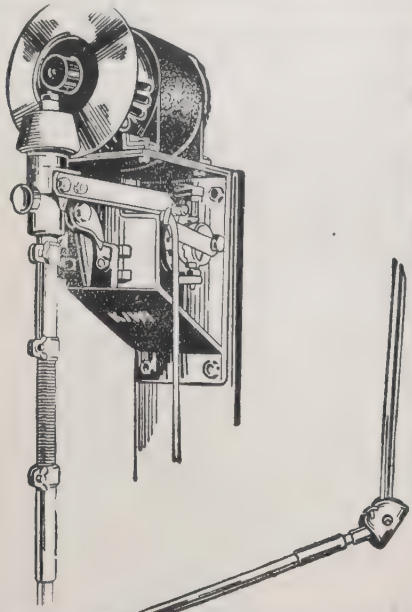

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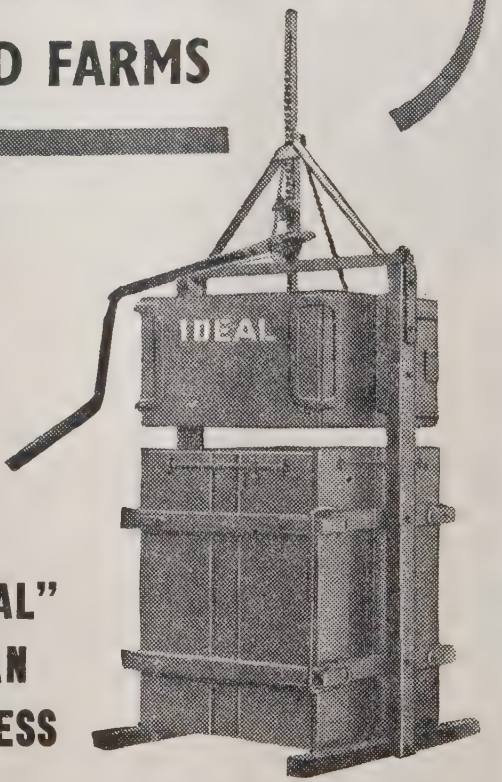

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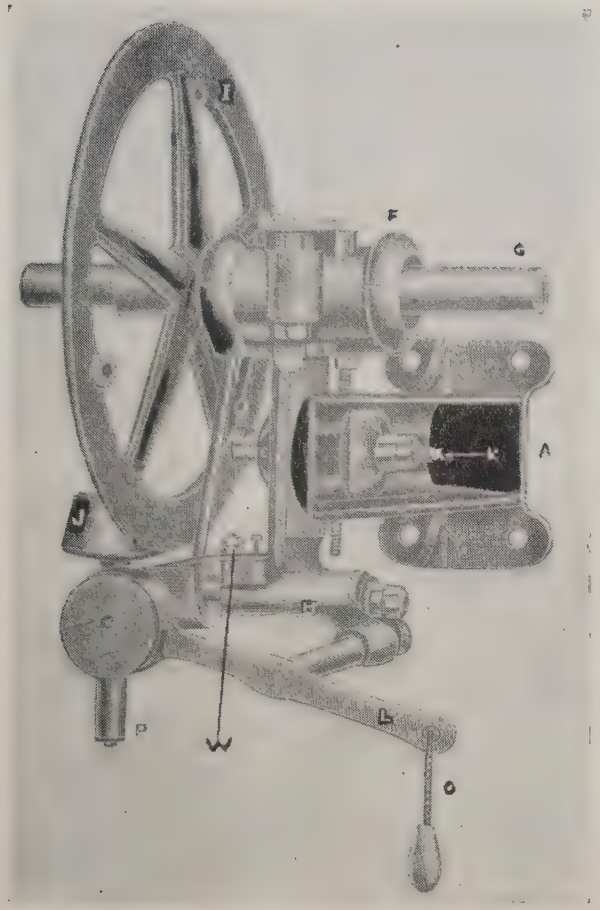


Early model illustrating wick-feed bracket.

A. Bracket arm. B. Washer "B." C. Washer "C." F. and H. Hanger and bearing. I. Friction wheel. J. Friction cone. L. Friction lever and weight. K. Main bolt and adjusting piece. P. Friction arm. W. Friction arm tension plate.

and swollen and fail to function. Every two or three years the oil channel in the lower half bearing should be cleaned out, as, if it is blocked, the oil flows out of the ends of the bearing and on to the floor. The oil tube from the main bearing to the friction arm should also be cleaned out at the same time as the channels in the bearing. In this early type machine the oil tends to overflow, and it is usual to hang tins under the bearings to prevent the oil falling on the floor.

The bottle-feed type, which superseded the wick-feed in the top bearing, is more economical, as it functions only when the shafting is revolving. Attention must here be given to the bottle, which should always have oil visible in it.

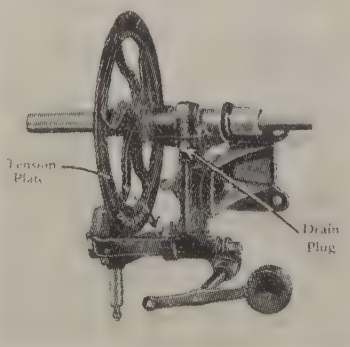
Ring-oiler Type

The later type of shafting plant is lubricated by the ring-oiler system, where an oil ring, revolving in an oil well in the centre of the bearing, distributes the oil along the shaft, the oil being returned to the central well through a channel on each side of the bearing. These bearings are fitted with an overflow plug, which prevents over-lubrication, and a drain screw lower down for draining off and cleaning out the oil well, which should be done every three seasons.

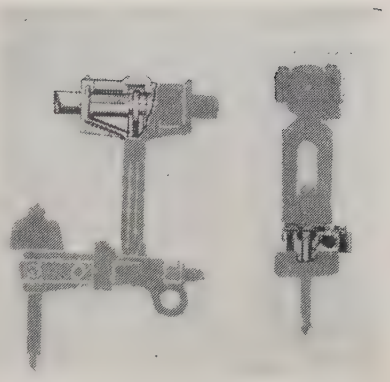
The friction arms in the ring-oiler type bearings are usually fitted with an oil pin feed from the reservoir, the oil being fed to the friction spindle as a result of the spindle keeping the oil pin in movement. This pin should be an easy sliding fit in the casting between the oil reservoir and the spindle. If the oil pin is allowed to stick, sufficient oil will not flow. On the other hand, if the oil pin is a slack fit the reservoir will be drained too quickly and lubrication will fail, causing damage to the spindle and the top of the gut core.

Adjusting Shafting Plant

The tension plate is attached to the lower front part of the main hanger and bearing by two bolts just above the friction arm and is adjustable by a set-screw to prevent the friction



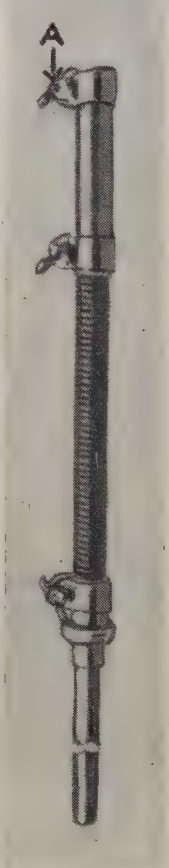
Ring-oiler type bracket.



Left: Standard bracket, showing ring oiler. *Right:* Friction arm in standard shafting plants automatically oiled according to speed of machine's running.

arm rocking. The tension plate must be adjusted by means of the set-screw to allow the friction arm to slide in and out freely without rock. This rock may cause the friction cone to climb up the friction wheel, or the friction spindle to run hot.

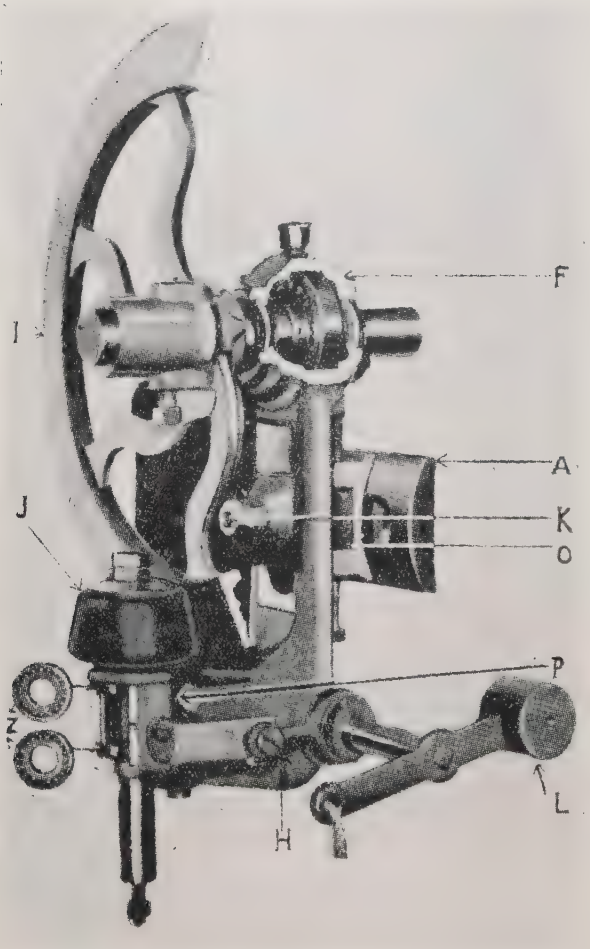
The friction arm is thrown in and out of gear by means of a peg through the friction lever. The peg is held in position by a set-screw through the end of the lever spindle — a point sometimes overlooked, with the result that the peg is lost.



A. Top wing nut.

Friction leathers or cones develop small flats on the surface. This causes noisy running, which develops as the flats increase. The flats can be removed with the tool known as a cone-trimmer and rest, specially made for this purpose.

Broken gut cores in the long tube are usually caused by failure to allow ½ in. to ¾ in. end play in the long gut core when it is assembled inside the tube. After assembly of the tube joint and cores on the bracket the top wing nut on the tube top sleeve should be slackened to allow the long tube to drop as far as it will go. The



Ball-bearing bracket. A. Bracket arm. F. Hanger and bearing. H. Adjustable cam lever. I. Friction wheel. J. Friction cone. K. and O. Main bolt and adjusting piece. L. Friction lever. P. Friction arm.

tube should then be raised ½ in. to ¾ in. and the wing nut finally tightened. New cores should be thoroughly greased before assembly, and all gut cores should be greased every two or three days while in use. The tube joint should be lubricated with oil, particularly the spindles, at least twice every run, and the cogs greased once a day.

Grease Lubrication

With ball-bearing brackets grease lubrication is provided by means of grease cups. With most types one or two turns of the cup, morning and afternoon, should provide sufficient lubrication for the friction spindles in the types where the grease travels down into the long tube. Where there is no escape of grease from the ball races a partial turn occasionally will provide sufficient lubrication, but care should be taken not to squeeze the grease in hard against pressure. The main ball-bearings mounted on the 1½ in. shafting usually have enough grease put in on erection to last three or four years, and a grease cup full to each bracket, at both shearing and crutching, will normally provide enough lubrication.

The electric plants are either of the direct drive type or the semi-electric friction drive by means of a friction cone and small friction wheel. Similar lubrication is required to that of the ball-bearing shafting plants, except that most of the modern motors have sufficient grease put in on assembly to last about nine years, when the grease should be renewed, preferably by the suppliers of the machines. In the types of motors where frequent lubrication is required great care must be exercised not to over lubricate, as this will cause damage, both to the motor commutator and carbon brushes, and may cause motors to stop running. This entails complete cleaning out, and possibly turning up of the commutator in a workshop.

All shearing machine electric motors should be returned to makers for overhaul and not tampered with by electricians who have not been trained in the particular requirements of this special type of motor.

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HANDPIECES.

Handpieces, when not in use, should be kept locked up to prevent unauthorised persons removing good working parts and replacing them with badly-worn parts—a constant source of trouble to handpiece owners, particularly those with new machines. Handpieces should be checked over at the end of each day during shearing, cleaned thoroughly, and rubbed over with an oily rag before being finally put away after shearing and crutching. If overhaul is required, the machine should be sent in to the repair workshop immediately after crutching is finished, otherwise it is doubtful whether the workshop will get through the accumulated repairs in time for the shearing season.

As a guide to the running of the types of handpieces in more common use the following information has been prepared:—

Wolseley Models

The only difference between the Wolseley No. 6 and No. 10 handpieces is that the latter is a half inch shorter and has a special joint. The No. 10 joint is a new and improved one that practically prevents entry of wool and dirt which in the No. 6 handpiece sooner or later requires removing.

These two handpieces are noted for their easy running and lack of vibration, besides their clean and easy cutting. Both machines give best results with shafting running from 640 r.p.m. to 700 r.p.m.

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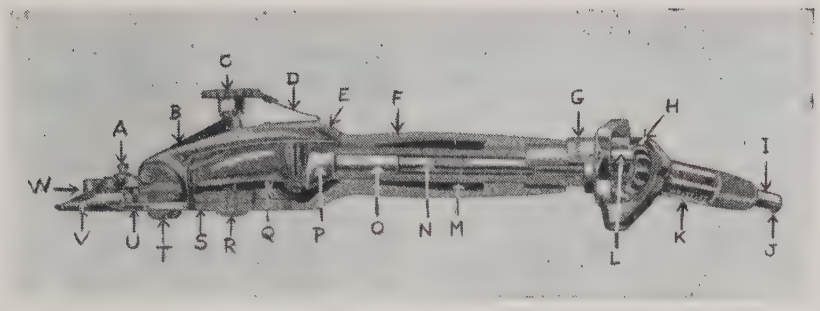
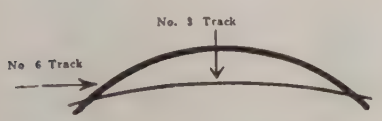


Wolseley handpiece. A. Fork spring adjusting screw. B. Lid. C. Tension nut. D. Tension spring. E. Body cover F. Shear body. G. Universal joint, short half. H. Universal joint cogs. I. Short spindle. J. Short spindle pin. K. Universal joint, long half. L. Joint stud. M. Oil reservoir. N. Main spindle. O. Main bush. P. Crank head. Q. Tension pin. R. Tension bolt. S. Base plate. T. Comb screw. U. Comb. V. Cutter. W. Fork feet.

The most important thing to remember about these Wolseley handpieces is that they are designed to work at high speeds and with light tension.

The Wolseley "floating fork" is different from any other fork, and in order to obtain the most satisfactory results only the Wolseley No 6 combs and cutters must be used. It is essential for fast, easy, and clean cutting to see that each cutter tip goes close up to each comb tip in the traverse of the cutter across the comb.

In spite of all advice, and the experience of champion shearers, there are still some users of Wolseley handpieces who run their No. 6 and No. 10 machines with the old No. 3 or "square gear." The diagram below shows the track made by the No. 6 fork and the track made by the tips of a No. 3 cutter.



From this it will be seen that as the No. 3 cutter approaches the middle of the comb there is excessive distance through which to force the wool before it can be cut. Only use of the Wolseley special No. 6 combs and cutters overcomes such a great disadvantage to easy shearing.

There is just one other point to watch and that is to see that the bifurcated fork spring, or the fork feet on the automatic fork, go right forward on the back of the cutter teeth; the use of a short fork spring or short fork feet allows the No. 6 cutter to have a lifting tendency, which necessitates harder tension, causing the comb and cutter cutting edges to be destroyed too soon; this, of course, calls for more frequent sharpening and the wearing away of both comb and cutter too soon.

Preparation for Shearing

After fitting the comb and cutter to the handpiece make sure that the butt of the comb is seated square against the base plate, so that the outside cutter teeth traverse the outside comb teeth on both sides. The cutter should be thrown across the comb two or three times by hand to test this, by placing the thumb on the universal cog joint and rotating it. The correct tension for most shearing is obtained when the cutter can be moved across the comb by firm but not hard pressure of the thumb.

If the fork jams in the cutter's traverse over the comb, examine the crank roller to see that it has not been reversed. The small diameter shank of the crank roller should be nearest the cutter. If it is placed on the crank head with the small shank furthest from the cutter, the fork is likely to jam when thrown right over to the side, and this may cause the back of the fork to split or break off.

See that the handpiece is about three-quarters full of oil and that the oil hole screw is tight, in order to prevent leakage of oil from the body.

Bifurcated Fork Spring

The fork fitted with this spring gives the best shearing, but it is necessary to see that only the long special No. 6 fork spring is used. The "standard" wide fork allows fine adjustment to be secured per medium of "rock." This is obtained by screwing in the fork spring adjusting screw slightly so that when the handpiece is fitted with a comb and cutter a slight rocking motion will be noticed when each side of the fork is pressed alternately with each thumb. Be careful not to apply too much "rock." In some classes of wool no "rock" at all is necessary, but care must be taken to see that each fork spring tip is making contact with each cutter tooth; to ensure this, if necessary, one of the fork spring tips can be slightly ground back on the fine emery disc. In the course of time the fork spring will shorten and have to be replaced with a new spring. Also the fork spring adjusting screw threads will wear, and the screw become a loose fit. When this takes place the fork spring adjusting screw should not be riveted in but an oversize fork spring adjusting screw fitted. A riveted fork spring adjusting screw will cause one side of the fork spring to bear too hard and the other side of the fork spring to lift, when the position of the fork spring screw is altered.

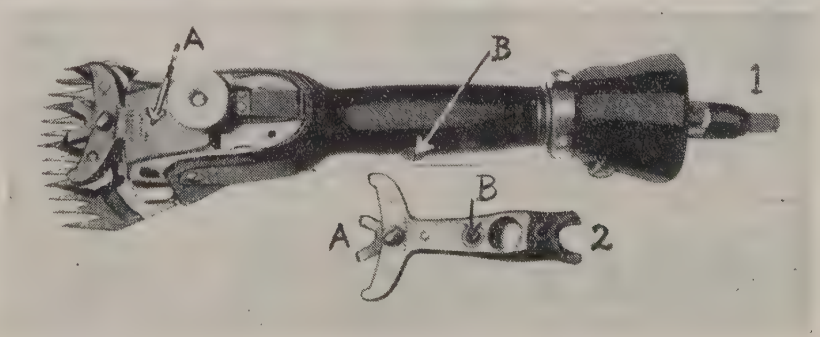
The adjusting of the fork spring screw may be thus explained:—

If the shear cuts roughly on the centre teeth of the cutter, put on more rock. If there is rough cutting on the outside of the teeth take off the rock.

When the fork tips become worn the fork should be retipped. Worn fork tips prevent the use of the fork spring.

Automatic Fork

The fork feet are retained in the latest pattern automatic fork by a flat spring. This spring should allow each fork foot to stay canted off the level in both directions. If the fork feet retaining spring is slightly bent,



1. Wolseley handpiece. A. Lid tension pin. B. Oil hole screw. 2. No. 6 wide fork. A. Bifurcated fork spring. B. Tension pin cup.

it will bear harder on one of the fork feet than on the other, with the result that one fork foot will not move freely or remain canted in both directions. The remedy is to exchange the spring for a light type spring. Alternatively as a temporary measure one or two thin washers could be placed underneath the spring at the point where the retaining screw fastens the spring on to the fork.

The fork feet should come well up on the back of the cutter teeth and if through wear end play develops in the fork feet shank, thin washers are obtainable to take up this play.

Tension Nut

The lightest possible tension should be used on a Wolseley handpiece and apart from seeing that the tension nut bears evenly on both sides of the lid no attention is needed. If the tension nut makes contact with only one side of the lid, the cutter will drag on the same side of the comb. Do not use hard tension with blunt comb or cutter.

Tension Pin Cup

Lid Tension Pin.—A special tension pin cup is required for Wolseley No. 6 and No. 10 handpieces. Any other cup will cause unsatisfactory running. The lid tension pin should seat well near the bottom of the cup, otherwise the machine is likely to run hot. An oversize lid tension pin is obtainable, and this part is referred to under the heading of "lid." If side play develops in these parts after a good deal of use replace with new parts.

Tension Pin.—Do not use a tension pin that has been bent or one that shows excessive wear, as this will affect the height of the fork and may cause the cutter to drag on one side of the comb.

Lid.—When the trunnion bearings in which the lid lugs seat become worn out of the true circle the handpiece should have the bearings rebushed. This work is usually not needed until after fifteen or twenty years' use.

When a new automatic fork is fitted to an old handpiece the back of the lid may sink too far. When a new comb and cutter is fitted the top of the lid at the rear should be at least 7/32 in. above the edge of the shear body. In order to raise the lid sufficiently it may be necessary to fit an oversize lid tension pin.

Body Cover and Tension Spring.—The proper way to remove the latest type body cover, after removing the tension nut, is to place the forefinger under the spring and press spring downward and forward. If the spring is pulled back there is a danger of breaking it.

Base Plate.—Keep this in good order by grinding it level after shearing about each thousand sheep. Grind it earlier if it becomes badly grooved. In replacing the base plate see that it is fitted square with the body, as if it is cocked forward one side one of the outside cutter teeth will not clear the outside tooth of the comb.

Fork Pins.—If worn combs and cutters are being used see that the fork pins are not too long, as if so, they will rest on the comb and prevent cutting. Keep the fork pins tight and replace when worn.

Tension Bolt.—The tension bolt and tension nut threads should not be allowed to become too much worn. Replace worn parts when necessary.

Crank Roller.—As stated previously, care should be taken to see that this is fitted with the small diameter shank nearest the cutter end of the shear.

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After a fork has been used some years it may be advisable to fit an oversize crank roller.

Combs and Cutters

Only the Wolseley Special No. 6 combs and cutters should be used on Wolseley No. 6 and No. 10 shears. No others are suitable.

The Wolseley Special No. 6 combs and cutters are necessary on the Wolseley No. 6 and No. 10 handpieces because they are the only gear designed to correspond with the arc described by the No. 6 fork (see diagram on page 241). As a result of using the No. 6 comb there is easy entrance into the wool, as the points of the No. 6 cutter teeth come close up to the points of the No. 6 comb; the middle teeth of the comb lead into the wool, the wool being cut first on the leading teeth.

If a No. 6 handpiece is fitted with a comb and then a No. 3 cutter is placed on the fork, it will be seen that each centre tooth of the No. 3 cutter traverses the fourth tooth in on the comb, 1-8 in. further back than the outside cutter tooth does. This happens on both sides of the comb and is one of the worst features resulting from the use of the wrong gear, as this particular 1-8 in. surface is worn by only one cutter tooth, whereas the other comb teeth are worn twice as much. The result is the cutter lifts, and double tracking soon becomes noticeable, necessitating more frequent grinding of both comb and cutter to prevent cutter lift and consequent rough cutting.

Only a Wolseley No. 6 cutter can eliminate this double tracking and the rough cutting which it entails.

It is of the utmost importance to see that only sharp combs and cutters are used. As soon as a cutter starts to drag change it for a sharpened one. **On no account screw down tension** to save changing a blunt cutter (or comb) for a sharp one. Such a course tends to create more friction and undue wear, as well as heating of the handpiece. When using the standard wide fork with bifurcated spring it pays to have enough cutters of the same thickness to last till each "smoko," as this will do away with need of constantly altering the "rock" to suit cutters of varying thickness.

Cooper E-B Handpiece

There are two models of the Cooper E-B shear, namely "A" and "B." The essential difference is in the construction of the back joint. The joint in the "A" is held to the barrel with one of the cogs. In the "B" the joint is held by the shear bushing, but in all other details both shears are similar in principle and parts are interchangeable.

That unusual appearance of the E-B, which most shearers call the "knob" or "high lid," incorporates a principle of tension which is universal in shearing machines. The tension pin does not require any attention other than frequent oiling, and provided the "ball" on the pin does not show excessive wear it can be used for a lengthy period over a large number of sheep without in any way impairing the efficient cutting of the handpiece.

The tension nut and tension sleeve are two distinct parts. The nut does not require attention, but the sleeve should have a small quantity of light grease inserted thrice weekly when in use.

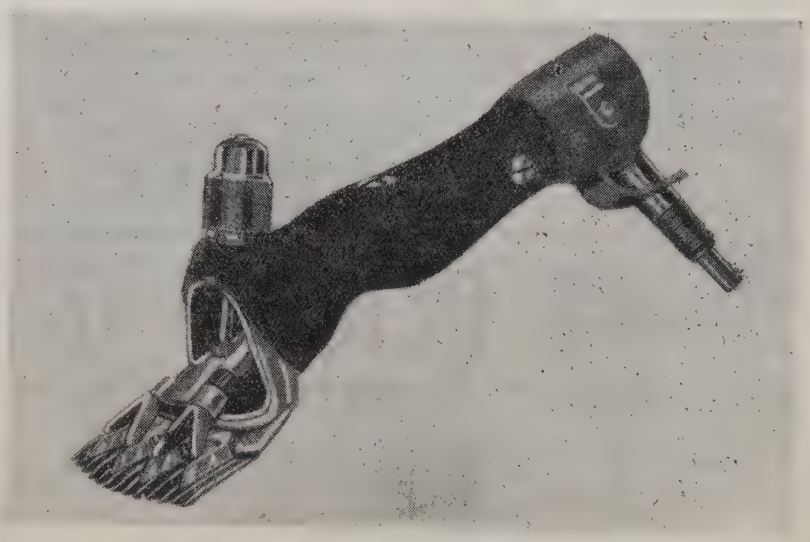
Do not release the tension on the E-B handpiece before throwing out of gear. The tension nut is so constructed that tension can be taken off after the machine has stopped.

Driving Mechanism

In driving the cutter the orthodox cutter pins on the fork are not used. On the fork yokes themselves are two taper pins which fit into holes on the two outside cutter tips. The taper on these pins ensures the elimination of lateral movement between the fork yokes and the cutter, therefore there is an absence of wear on both these parts and it is necessary only to see that the fork yokes are kept free in their sockets by means of an occasional oiling.

The fork yoke retaining spring is fitted with two safety lugs which fit in the two holes at the back of the cutter. It is very important that these lugs do not touch the cutter in any way, as this pressure will detract from the good cutting of the shear.

The centre post on which the fork pivots is the most important part in the E-B handpiece. This part screws in from underneath and regulates the height of the fork in the shell of the handpiece. Once the position of the centre post is correct tighten the lock nut securely. Instructions for setting the centre post are given later. The oiling of the centre post should not be overlooked.



The Cooper E-B handpiece.

The complete shell of the handpiece is in one piece, which ensures a permanent level. No amount of wear can alter the level and no adjustments are necessary to maintain this most important condition. A shear that cuts more on one side than on the other is a source of perpetual worry and trouble at shearing time.

Oiling and Care

The main oiling points are the barrel, which should be filled with

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suitable oil twice daily; the comb and cutter, top and bottom cup, back race of the fork, cogs, and back spindle should be oiled every ¼-hour during shearing. It is a good idea for shearers to lie the handpiece on its side when idle so that any surplus oil in the body of the machine will run into the nut.

To remove Fork.—Remove the screw at the back of the tension nut, lower the centre post, and withdraw fork. When replacing tension pin put large head uppermost.

To Replace Crank Roller and Fork.—Remove screw on back of handpiece and thread the crank roller on to a piece of stiff wire, or a thin screwdriver. Place the end of the wire or screwdriver on to the pin of the crank head and allow the crank roller to slip down to the pin. Turn joint spindle until crank roller is at the bottom or either side of the machine, but not on top. Insert fork and pass ball-race over ball. Replace centre post and screw and adjust the centre post to its correct position.

Centre Post.—The centre post is set at the correct height before the handpiece leaves the factory. Do not alter its position until wear makes this necessary. Bear in mind that the centre post has nothing to do with the adjustment of the tension. The centre post is primarily the pivot upon which the fork swings, and is made adjustable so that the fork can be set not to strike the inside of the shell when extra thick or extra thin cutters are used. The correct position is obtained as follows:—

Screw in the post until the end is one thread below the level of the nut. Place a comb and new cutter on machine. Remove the large screw from the back of the handpiece and turn the joint spindle until the crank roller is on top dead centre. About one-third of the crank roller should now be showing above the top of the pin on the crank head level with the top of the fork. Raise or lower the centre post until the correct position is obtained and then set.

Fork Tips.—The tips on the fork which fit into the cutters are extremely hard, and it will not be necessary to replace them until they are almost worn away. When this happens turn the old yokes on their side with a pair of pliers, withdraw them, and replace with new yokes.

Joint Spindle Pin.—To replace drive out the old pin with the pin punch. This pin is tapered, and must be driven out from the riveted or burred side. Drive in the new pin until it fits closely. Next place the short end, which projects, on the grinder disc, and in an instant it will turn a bluish tint. This removes the temper from the short end and it can now be placed on end on an anvil and riveted or burred over. Rivet thoroughly again, place the riveted end on the grinder, and smooth it off nicely, to enable the spindle to fit freely in the bayonet joint.

Insert the spindle into the bayonet and see that the end of the pin does not project above the outer surface. If it does, grind the end off until it is level. If the pin projects above the bayonet it will run against the ferrule, causing heat and damaging the tube.

E-B Patent Joint.—See that a constant supply of lubricant is maintained in the sand or grease caps which cover the pins on each side of the joint. In all joints the wear in the pin-bearing holes and on the pin is caused by a lapping action which results from sand and dirt rubbing on the oily surface. The E-B patent joint has caps covering the sides of the joint to keep out sand and dirt. The reservoir for grease in the cap will provide clean lubrication over a long period. To get the best results wash the parts of the joint thoroughly before each shearing run to make sure that any small accumulation of sand or dirt is removed and

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that the bearing surfaces of the pin are running in good clean lubricant.

At the end of shearing dip the front of the handpiece into very hot water to clean off grit, yolk, etc. As soon as it is dry dip this part of the machine into light oil, then wrap in paper to keep out dust and moisture, and store in a dry place. The combs and cutters should also be treated in a like manner. Far too many farmers neglect to thoroughly clean handpieces, combs, and cutters after shearing is over, with the result that this expensive gear becomes rusted and its life is consequently shortened. The machinery plant installed in the shed requires an occasional run during the idle period. If all parts are cleaned and oiled they are kept in good running order and their life considerably prolonged.

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The Lister "Streamline"

The Lister "Streamline" shear is a robust machine, accurate in workmanship, all the working parts being ground fits and hardened, and for this reason alone it behoves owners and shearers to maintain these high standards as long as possible by seeing that the right kind of lubricating oil is used and that when the season is over the machine is cleaned with hot water, or, better still, washed in kerosene to remove the yolk, and finally oiled and stored in a dry place.

The Lister Handpiece.

In use there is very little to go wrong if a few simple rules are observed.

The machine is of the central pivotal type; that is, the fork is pivoted underneath on a rocking pin, and the top is engaged with a similar pin, which is stationary and is used to apply the pressure necessary for cutting purposes. As these points of contact on the fork are directly on the centre line of the fork, the machine cannot get out of parallel, or, as it is commonly expressed, out of "level."

Nothing lasts for ever and certain parts must wear, a factor which varies in different parts of the country, for instance sandy country is very detrimental. Broadly speaking, the wearing parts on this machine are:—

1. Rocking pin plate.
2. Fork tips.
3. Fulcrum pin.

The rocking pin plate can be reground on the grinder disc or renewed. This also applies to the two last-named items.

The fulcrum pin in the lid is driven in on a taper and can be renewed in a few moments; fork tips can be ground flat on the ends or renewed without the aid of tools.

Short Spindle Pin

The short spindle pin is responsible for driving the whole machine, and whilst this has an important mission, it gives very little trouble and can be driven out easily if a short, stubby punch is used. The spare pins are tapered and longer than are actually required. When fitting a new pin see that the taper goes in from the right direction, which should give more than enough to rivet over; in fact, after trying it in, it is sometimes advisable to file a little off before riveting up; always use a light hammer for this purpose and do not let the large end of pin protrude too far, as it is liable to cut the bottom off the short tube. These pins are hardened on the large end to stand up to wear, so that if it is necessary to shorten them after riveting up they should be reduced on the grinder disc.

Tension Bar

If this bar is examined closely it will be found to have a flat on one side, which always goes nearest to the fork, its purpose being to allow clearance when very thin cutters are being used.

The main bush cannot distort and if provided with good lubrication will last a lifetime.

The Lister "S"

This model was an improvement on the Lister No. 3, and as there are many in use some reference should be made to them. Features of this machine are the long bush, which extends from one end of the machine body to the other, whereas the No. 3 was in two pieces. The tension nut has a split-lid bush, which enables the operator by screwing up the lock nut to take up any wear that may take place.

Adjusting Crown Plate

The crown plate has a most important function to fulfil because should it become worn it throws the fork out of parallel. In the case of

the "S" it is best to replace the crown plate. There have been instances of the tension crown plates being packed up with leather, tin, and even threepenny pieces. This is very bad for the tension nut, as it not only lessens the bearing on the threads and destroys the stability of the machine, but also prevents the crown plate from being correctly levelled.

Fitting Fork Pins

When fitting new fork pins do not allow too much metal to rivet up. If they are too long the pins will not clinch, with the result that they will move about in the fork and enlarge the hole, in time rendering an otherwise good fork unserviceable. Always use a light hammer to rivet in new fork pins. If you are using very thin cutters see that the pins are not bearing on the comb; even a number of experienced shearers have fallen down on this point.

Tension

Tension is of the utmost importance and is the cause of much trouble, especially with an inexperienced shearer. Let us illustrate in a simple way what is meant. If you bought a pair of first-class scissors and used them all day for two days, you would not dream of tightening them up so much that they worked with difficulty and cut their own edge away. If they were blunt by this time, you would have them correctly sharpened and they would still have that smooth feeling when used. A shearing machine is amply powered and the tension nut is the only mechanical adjustment the operator has once the machine is hooked up and the sheep on the board. This is often ridden to death, with the result that the machine gets hot, which is accentuated by the fact that with a learner the machine is out of the wool for comparatively long periods. The machine is often roundly condemned, whereas the fault is with the operator.

The moral of this is to put the lightest tension on the machine when taking the first blow in opening up the fleece, and as time goes on increasing the tension a notch at a time until such time as it becomes blunt, when the comb and cutter should be changed. No time can be set down as to how long a comb and cutter will last before grinding, as it depends on the nature of the wool, the grit content, etc.

NITRATE AND AMMONIA IN SOILS

Much emphasis has been laid on the value of stock urine to the soil. Experiments on this subject are described in a bulletin, "Studies of Nitrate and Ammonia in Soils under Permanent Pasture," which is issued free by the Department of Scientific and Industrial Research.

A Few Don'ts

Don't take several shears to pieces and mix the parts up and expect them to function correctly after assembly. The parts are interchangeable when the machines are new, but after being in use some years wear takes place and machines require individual attention.

Don't use inferior lubricating oil. Motor oil is not suitable.

Don't grind the parts of the machine away. More machines are ruined by this practice than the ones that are worn out. All the main wearing parts can be renewed.

Don't change the lids on No. 3 or "S" machines, as they are matched up. The lid is numbered to correspond with the number on the body.

Don't use excessive tension; it throws undue strain on the cores and causes the machine to heat up unduly and reduces efficiency. Change combs and cutters often.

Don't forget to oil the fulcrum pin on the No. 3 and "S". There is an oil hole provided for this purpose. It is usually the most neglected part of the shear.

Don't forget to keep some good oil in the barrel of the machine.

CORRECT GRINDING OF COMBS AND CUTTERS.

The grinding of combs and cutters is most important, as bad grinding causes nearly half the troubles experienced in shearing sheds. Machines cannot be expected to cut well if the combs and cutters are not properly sharpened. The following suggestions and advice will enable you to obtain not only the keenest cutting edge on both comb and cutter, but an edge which will last the maximum number of sheep without re-grinding and consequently result in economy in the use of both combs and cutters.

Setting the Grinder

See that the grinder is set correctly, i.e.:

(a) Pendulum rod should be hanging freely and perfectly perpendicular. See that the comb and cutter holder just touches the disc at the starting point, "A," shown in the illustration. The centre edge of the comb and cutter magnet should be in line with the centre of the grinder spindle. Under no circumstances should anyone be permitted to bend the pendulum hook or rod after they have been once set correctly.

(b) Discs should be true, and properly dressed with the best glue and emery cloth, or corundum cloth. See that the surface of the boss of the disc is quite clean before fitting to the spindle, as the smallest particle of

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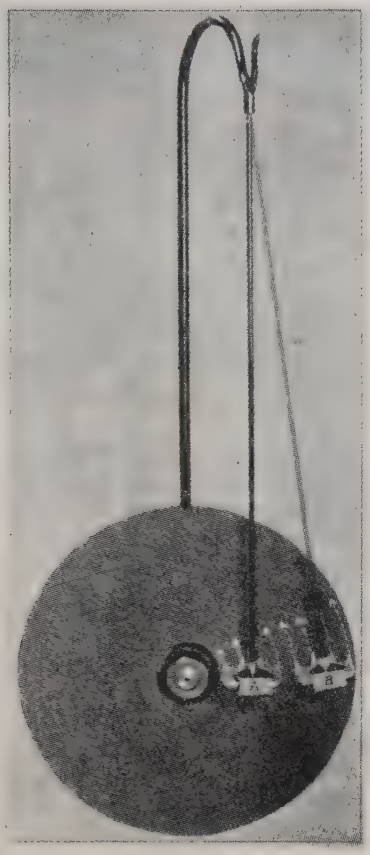


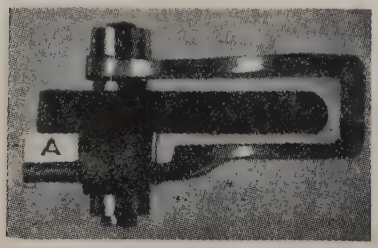
Setting the grinder.

foreign matter between the boss and the collar will throw the disc out of balance and it will not run true.

(c) See that the comb and cutter holder grinds evenly, not more at the heels of combs and cutters than at the tips, or vice versa. If cutters grind more at the heels than at the tips, increase the distance between the pins and the magnet of the comb and cutter holder. If there is excessive grinding at the tips of cutters, decrease distance.

Preparing the Discs

Have ready on the bench glue and glue brush and coarse and fine emery cloth. Note that every sheet of emery and corundum cloth has a hole in the centre.



Increase or decrease space A. See "Setting the Grinder," paragraph (c.)

The clamp screw should be firmly fixed on the bench in a horizontal position so that the glue does not run, but spreads evenly.

The discs must be clean and quite free from grease or oil. It may be necessary to wash them in hot water and soda in order to remove grease, which would otherwise prevent the emery from sticking fast. The discs should be rinsed in cold water, drained, but not necessarily dry.

It is most important to use a special emery or corundum cloth and glue for the metal discs. The machine manufacturers' recommendations regarding suitable materials should be strictly followed.

Apply a thin even coat of glue to the disc, spreading carefully and evenly over the surface, and rubbing well into the pores of the disc.

Place the emery, cloth side up, on a clean bench, and then rub out the brush on the back of the emery sheet without the addition of any more glue, as this will put a very thin film of glue over the emery cloth, and prevent the dressing on the back from "blotting" the glue on the disc when the emery is laid thereon.

See that your clamp plate is perfectly clean, then place in position, and screw down tight on top of the disc with the grinder spanner.

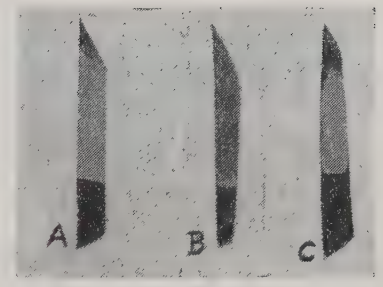
Discs are very often dressed in the evening, and left in the clamp all night so as to be ready for the next day's work.

The edge should be trimmed with a sharp knife before the clamp is removed. Always remove the clamp plate at least half an hour before the disc is required to be used, so that the glue may harden, and the emery, being firm, will grind better and last longer.

Never put the discs to dry in the sun, and remember that a fine emery disc is required for the cutter and a coarse emery disc for the comb.

Operation

1. After placing comb or cutter on the holder pins grip the comb and cutter holder by the brass between the thumb and forefinger of one hand, allowing free wrist movement.
2. The operator should stand squarely to the work and firmly on the feet, slightly to the left of the work.
3. Wait till disc is up to full speed and start grinding at position "A," moving over to "B" and keeping sufficient pressure on the holder to make the sparks fly upward the whole time. Always finish grinding at the point "B," lifting the holder squarely off the disc after sufficient number of movements from side to side of the disc. Be careful not to apply pressure too long or you will burn and soften the points of cutters particularly.



A. Grinding must be done evenly, from the tips to the heels, ensuring sweet cutting and a lasting edge on combs and cutters. See that the cutting face of each comb and cutter is ground bright and level; no dull spots on any part, particularly the tips, where all the cutting is done.

B. If cutters or combs are ground away at the heel like this, you can never sharpen the tips, which do all the cutting. Before a cutter is ground away so much at the heel you may be able to sharpen it so as to get a cutting edge for a sheep or two, but not much longer. In shearing, an impression of softness in the cutter is given when it is ground away at the heel.

C. If the cutters are ground more at the tips, like this, you will have to be particularly careful to see that the fork spring tips and fork cutter bars are all in contact with the cutter.

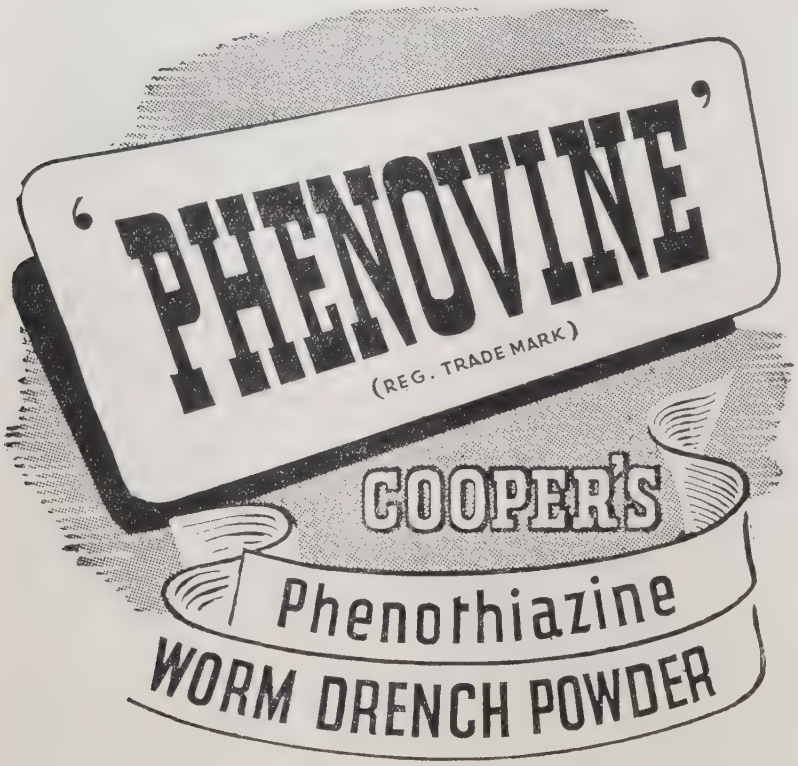
N.B.—Pay particular attention to combs and cutters. Make sure that they are quite clean and dry before commencing to grind.

Do not economise with the emery at the expense of ruining the temper of the combs and cutters.

Always replace keeper or plate on face of magnet when finished grinding. This will not only protect the magnet but will assist to retain the magnetism.

RIDDING LAND OF SURPLUS WATER.

Money spent on other aspects of farming practice may be wasted where drainage is neglected. "Surplus Water," Bulletin No. 205, illustrates the fundamental importance, where necessary, of the provision of sufficient drains to remove all surplus soil water quickly. Types of drains and methods of their installation are illustrated. The bulletin is available free from offices of the Department of Agriculture.



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Veterinary Notes for the Farmer

Rearing Orphan Animals

THE orphan animal is a frequent farm problem, and one requiring sufficient attention if satisfactory results are to be obtained. The natural food of any young mammal is the mother's milk, and when this is replaced by what amounts to an artificial food due care must be taken to correct as far as possible deficiencies in that food. In all cases of orphans the foster mother is the ideal substitute, but generally this is not available and hand rearing has to be undertaken. The calf presents no problem because it is immediately placed on its own natural foodstuffs, but other animals necessarily have to be given a foreign milk diet.

Cow's milk is the natural choice and the table below indicates the variations in composition of other natural milks.

	Per cent. Water.	*Per cent. Mineral Matter.*	*Per cent. Protein.*	*Per cent. Sugar.*	*Per cent. Fat.*
Cow	87.2	0.7	3.5	4.9	3.7
Mare	89.0	0.6	2.7	6.2	1.6
Ewe	80.8	0.9	6.5	4.9	6.9
Sow	81.0	1.0	5.9	5.4	6.7

The differences in composition of the various milks reflect the different requirements of the young animals. The variations actually run a close parallel with early growth rate of the animal; thus, a young pig which doubles its birth weight in about a quarter of the time that a calf does naturally requires a more concentrated diet than the calf. This is shown by the composition of the milk —the body-building protein content of sow's milk is, for instance, almost double that of the protein of cow's milk.

Hand rearing the orphan foal is always a difficult job, both from the point of view of the often unsatisfactory results and the time and trouble involved. For the diet cow's milk is naturally the principal food involved, and as can be seen from the above table there are several marked differences in cow's milk and the natural food, mare's milk. The essential differences are that the protein and fat content of cow's milk is higher and the sugar content lower.

In the first place choose milk from a fresh cow, preferably tuberculin tested, and giving milk of low fat content, and prepare the food as follows:

1. Dissolve a tablespoonful of sugar in a little warm water (lactose or milk sugar is the best, and failing this glucose).

2. Add 3 or 4 tablespoonfuls of lime water.

3. Make up to one pint with fresh milk.

The food must always be warmed to blood heat before feeding, and for the first few days give about a quarter of a pint (five fluid ounces) every hour. The handiest method is from a bottle with a large nipple. Whatever utensil is used for feeding should be thoroughly cleansed and scalded before using.

As the foal grows the amount of milk may be gradually increased and the period between feedings lengthened. After about a week six feeds a day will be sufficient and later only four. At three to four weeks the sugar can be stopped, but it is wise to carry on with the lime water as this has a mild corrective effect on the bowels and gives needed mineral matter. After six weeks skim milk can be substituted for whole milk and after three months the foal can be given all it will drink three times a day. By this time the animal should have been taught to drink out of a bucket. The bowels should move freely, but if scouring occurs at any time, give two or three tablespoonfuls of castor oil and stop the feeding of milk for two or three meals, giving only sweetened water and lime water.

At three to four weeks of age the foal will begin to nibble grass and a fresh, clean, well-limed pasture should be available; in addition at the earliest possible age, usually about two months, the foal should be fed a little solid food. Oatmeal, bran, and crushed oats are easily digested and should be given in small quantities. When the milk diet is finally given up it is wise to give a small quantity of cod liver oil in the feed.

The orphan or pet lamb is a common sight in sheep-raising districts and is relatively much easier to rear than the orphan foal. Nevertheless, to get the best results he requires careful attention during the early stages of his career. Ewe's milk being relatively higher in fat than cow's milk, the orphan lamb's feed should be from milk rich in fat, even to the extent of adding a little cream, and for the first few weeks the lamb should have milk from the same cow. For the first few days and nights the lamb should be fed only a small quantity of milk (about two or three tablespoonfuls) and it must be fed often. Careful attention to cleanliness of utensils is again necessary and the feeds should be given at blood heat. After two to three weeks of age it is not necessary to feed more than three times a day.

When hand rearing young pigs the bests results are obtained by feeding on sweet whole milk six to eight times daily during the first four weeks. It is best not to add anything to the milk in the way of sugar or cream, although in this respect a high-testing cow should be used for the supply. A quart of milk per head daily is sufficient but suitable concentrates (meat meal, linseed meal, etc.) should be supplied as soon as the pigs can eat solid food so as to balance the lower protein value of the cow's milk. The first few days the milk should be at blood heat for feeding and until the piglets can be taught to drink from a trough a nursing bottle may be used to feed the orphans. Warm housing, clean bedding, and a plentiful supply of fresh water must not be neglected.

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HAY and ENSILAGE

Increase the area for hay and ensilage this season. Feed cows well in the autumn, winter and early spring and this better feeding will be reflected in increased butterfat production.

- ★ Close fields for ensilage early in the spring.
- ★ Early cut fields produce a good summer aftermath.
- ★ Protect haystacks from the weather.

Britain requires increased quantities of dairy products. More hay and ensilage mean more butterfat.

Hay and Ensilage

GREATER dairy production still is required in 1945-46. The foundation of that production is the proper maintenance of the dairy herd next winter, and farmers should see that adequate supplies of hay and ensilage are conserved. They should also endeavour to make good-quality hay and ensilage, which can come only from good-quality pasture containing a high percentage of clover.

When to Cut

The aim should be to cut the crop at or just before the flowering stage of the chief grass present in the sward. This is easily accomplished when making ensilage, but when making hay it may be necessary to delay cutting to a later stage.

To ensure the cutting of most of the crops about the flowering stage it is necessary to close some of the fields early enough so that they can be cut just as the chief grass present comes into head. The fields are closed and mown in rotation, the earliest fields being cut for ensilage, particularly where climatic conditions do not permit of haymaking.

After grass or clover is cut the cells continue to breathe and this continues for a period after the material is stacked. This respiration of the plant cells results in loss of nutrients to an extent of about 30 per cent. When hay is made the loss of nutrients may prove to be considerably greater if weather conditions are bad during the harvesting period through loss of soluble nutrients through leaching by rain.

Late Cutting Detrimental

Although, therefore, you commence with a high-nutritive product, when hay or ensilage is made you are faced with the prospect of losing a considerable amount of feeding value even where all care is taken. But the resultant feed saved can prove of negligible value if the material is cut late, as it very frequently is, and if in addition it is poorly saved.

The closing of fields for hay or ensilage has a detrimental effect on the ultimate vigour of the bottom grasses and clovers. If the crop is cut late, the bare ground dries out quickly to the detriment of the short-rooted ryegrass and white clover in the sward. Therefore, the earlier the cutting the less will these two most important species suffer from overshading and drying out. Fields cut early produce appreciable amounts of summer grazing, while fields cut late produce little or nothing during the dry period. The great advantage of ensilage is that it permits the field being cut early and ensures a good aftermath.

It is expected that the Army will again supply labour to assist in the harvesting field, and farmers should endeavour, therefore, to shut up as large an acreage as they can spare. In the seasonal notes for April the effect on future production of the area saved for hay and ensilage was illustrated. If the trends continue in the same direction, a large area of hay and ensilage will ensure a high dairy production in 1945-46.

Maize

THE time is approaching for the planting of maize. This crop is suited to moist, warm climates, and produces most highly on fertile, moist, but well-drained soils. It can be put to many uses at varying stages during growth. It can be utilised during mid-growth as green fodder for feeding cattle in the summer or making ensilage, in the late green-cob stage for feeding to cattle or pigs, and the grain when harvested is useful for feeding to poultry or pigs. It is a most highly-productive crop at any of the above stages, and outyields any other cereal grown in New Zealand.

For greenfeed the seeding is heavy, about two bushels per acre, whilst for grain 14lb. per acre is all that is required. Since the crop may be put to many uses the dairy farmer can plant a large area with the assurance that good use can be made of it. If sown for greenfeed and a wet summer ensues, providing plenty of green grass growth for the cows, the maize can be made into ensilage for feeding next winter. If sown for production of grain, and autumn supplies of skim milk prove insufficient for finishing the autumn litter, the whole plant can be fed to pigs in the late green-cob stage.

For pigs, however, its main use lies in feeding the grain to assist in wintering the pigs. For this purpose the grain requires the minimum of storage, since it is not ready for harvesting until May and the cobs may be left a month or so later if need be before harvesting. It is therefore unlike other cereals which must be harvested at a particular stage and if harvested by reaper and binder require a fortnight of dry weather after harvesting to cure the crop. The maize crop also differs from other cereals in not necessarily requiring machinery for harvesting. It is, therefore, especially fitted for utilisation by the dairy farmer, who normally does not own cereal-harvesting machinery, for providing feed for his dairy cows, pigs, and poultry.

The maize crop requires a firm seed-bed, fine below, but there is no objection to small clods on top of the ground. It will not stand cold winds or frost, and so should not be planted until danger of these weather conditions occurring is past. The dairy farmer who plants a few acres for greenfeed, a few acres for grain, and a few acres of root crops ensures continuity of production of his dairy herd through the summer and autumn, the finishing off of his pigs in the autumn, and the maintenance of the pigs he has to winter.

Radio Broadcasts

RADIO talks to farmers will be given from Station 1YA, Auckland, at 7.15 p.m. on the following dates:—

October 2—"The Present Position with Regard to Fertilisers," by Mr. I. L. Elliott, Supervisor of Fertiliser Supplies, Department of Agriculture, Wellington.

October 9—"Wartime Farm Problems in North America," by Dr. I. D. Blair, Department of Agriculture, Wellington.

October 16—"Diseases of Cruciferous Crops," by Dr. W. Cottier, Entomologist, Plant Diseases Division, Auckland.

October 23—"Young Farmers' Clubs Session," to be arranged by the Clevedon Young Farmers' Club.

October 30 — "Farming a Small Holding," by Mr. C. Walker, Instructor in Agriculture, Department of Agriculture, Thames.

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Main Crop Potatoes

WITH the demand for an increased area of potatoes growers will need to strain every effort so that the requirements are met. The potato crop ranks high among crops as regards yield per acre of food fit for human consumption. In wartime, particularly in those countries where food is extremely scarce, it is exploited to the fullest extent and people are urged to consume less bread and more potatoes.

For potatoes the land requires to be fertile and loamy in texture and well drained. The potato grower usually is very particular in selecting the most fertile and free-working soil on his farm for the crop. The soil should be worked to a fine state and deep enough to facilitate planting at the required depth.

In spite of the shortage of phosphate the fertiliser permissible under the ration—3cwt. of superphosphate or its equivalent—is adequate in the chief main crop potato districts. Potatoes respond also to a supply of nitrogenous fertiliser, and where available a hundredweight of a quick-acting nitrogenous fertiliser such as sulphate of ammonia should be applied. In most potato-growing areas potash is not deficient in the soil and therefore need not be supplied.

Selecting Tubers

There should be no need to stress the care which should be taken in the selection of potato tubers for planting. In all cases certified seed of a variety suited to the climatic and soil conditions should be used.

The following table taken from returns from the Agricultural and Pastoral Statistics illustrates the value of certified seed:—

Year.	Average yield per acre of crop grown from Govt. Certified Seed. Tons.	Uncertified Seed. Tons.
1936	7.43	5.95
1937	6.85	5.10
1938	7.37	6.37
1939	5.66	4.72
1940	8.16	6.99
1941	6.31	5.46
1942	7.39	5.87
1943	7.42	5.64
Average, 1936-43	7.07	5.77

In the heavier soils of Canterbury the most suitable varieties to grow are Inverness Favourite and Arran Chief, whilst on the lighter soils Dakota or Aucklander Short Top have proved suitable. In Otago and Southland the variety King Edward VII is favoured.

In the North Island for the main crop growers are advised to plant Aucklander Short Top, which possesses a degree of resistance to late blight.

If care is taken to encourage the formation of well-formed sprouts and damage to them is avoided in transport of the seed to the field and in planting, a quicker and more even strike of plants is ensured, resulting in easier control of weeds in the early stages.

After planting, but before the plants are through the ground, the land should be harrowed to destroy seedling weeds. Inter-cultivation may be deep and wide in the early stages of growth, but particular care should be taken in later inter-cultivations and in moulding operations to cause the minimum of interference with the rooting systems of the plants.

In moist and warm climates it is advisable to spray the crop to prevent late blight. However, if a close watch is kept on the crop, sprayings carried out immediately on noticing the first appearance of late blight will assist in keeping the disease at bay, although not so effectively as applications prior to its appearance.

—J. E. BELL, Acting Land Utilisation Officer, Wellington.

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In the Orchard and Vineyard

Orchard Notes

Important Maintenance and Control

Timing Spray Applications

RECOMMENDED dilutions at which fungicides and insecticides should be applied to prevent or control the usual infections have been shown in previous notes published in this journal with reference to control of orchard pests and diseases.

The period at which sprays should be applied and the length of intervals between applications are also indicated as a guide coinciding with the stage of tree growth. There is no set standard, however, for the length of intervals between sprays; this is a matter for the individual orchardist to decide according to local weather conditions, the incidence of any troublesome pest or disease, and the general state of growth and foliage.

The preservation of healthy foliage is an important factor in relation to crop production and is closely allied to efficient spraying and disease control. Complete spray coverage is essential over all tree parts, the underside of the foliage and centrally-located branches being as important as the outside surface of the tree.

Grafting and Refurnishing

The reworking of unwanted or uneconomic varieties over to higher grouped or better paying varieties can still be continued, providing care has been taken to keep the scions in good condition; they should not have been allowed to dry out or the buds should not be too forward. Make a clean cut when shaping the scion, see that the cambium of both scions and stock are in contact, and ensure that the sealing of the wounds makes them both air and watertight.

Periodical observations on trees which have already been reworked should be carried out until the union is complete and callousing of the bark is preventing entry of water. Sealing should be maintained until this is satisfactory.

September Reminders

1. **Don't neglect any spray that is due.**
2. **Don't overlook thinning stone fruits when ready.**
3. **Watch for early infections of fireblight.**
4. **Attend to resealing and releasing of ties on grafts.**
5. **See that cases for stone fruit are ordered and wet timber dried out.**

Where trees have been deheaded for grafting and the scions make vigorous growth some support may be needed for protection against strong winds or mechanical injury if later growth is still strong and vigorous, especially if the procedure is to let them run unpruned for the first year. A stout stick tied parallel to the scion and limb saves considerable damage to trees in exposed positions.

In-arching

Variable results appear to have been obtained in different districts from in-arching fruit trees. On good soil, however, outstanding results are evident where vigorous, strong-rooting stocks have been used and in-arched into the lower part of the limbs of weak-growing trees.

Fireblight

From now on a sharp look-out should be kept for any indications of this bacterial disease in the orchard, especially on pear and quince trees. Infected parts are distinctive in appearance and on the pear tree and its close relatives show up practically black, while the apple tree and other hosts show a brown discoloration. Blossoms, stalks, leaves, spurs, and twigs soon become infected and turn colour. In susceptible hosts the disease may travel into the lateral or branch. The laterals, being small, often become completely girdled, but in a branch or large limb the disease may be more restricted and a slow-growing canker often develops on one side of the limb.

The disease is easily spread, the main means being by insects which visit the ooze which exudes from principal infections and which contains viable bacteria, and carry away with them numbers of the organism to other trees. The rate of travel of the disease is fast in sappy growth, and down through the soft tissues any visible infection should be immediately dealt with by cutting out well below the infected part into clean, healthy wood. Where old hold-over cankers are observed the removal of the whole branch or limb may be necessary.

Secateurs, saws, etc., as well as tree wounds should be sterilised with a solution of mercuric chloride 1 gm. hydrochloric acid, concentrated 15 c.c. and water 1000 c.c.

Tree wounds should be first swabbed with this solution and when dry painted with a bitumastic dressing.

Codling Moth

In some districts this is the most important pest with which orchardists have to contend, and the loss it causes in crops is difficult to estimate.

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Protection Today — Progress Tomorrow

Where climatic conditions are favourable to its early emergence thorough and continual applications of lead arsenate at the rate of 1½ lb. powder to 100 gallons of water (if paste is used 3 to 3¼ lb. is needed to 100 gallons) are necessary from the petal-fall stage until prior to picking; late applications also serve to control the leaf roller caterpillar. Other supplementary measures can be adopted, but all must be in addition to the thorough applications of lead arsenate.

Prominent harbouring places of the codling larvae are under the rough bark of trees, crevices or cracks in orchard boxes, and in stakes or tree supports.

A systematic clean-up and programme of orchard sanitation will do much to eliminate the overwintering population of this pest and thereby reduce the infection during the coming season.

Thinning Stone Fruit

The important operation of thinning should not be overlooked wherever the setting is heavy. When the stoning period is over thinning should commence if quality fruit is required. The crops should be gone through and malformed or diseased fruits removed, and the remainder thinned or spaced out so that no two fruits are touching. This not only enhances the quality and size of the fruit, but enables better penetration and coverage of sprays on the remaining fruits, which are essential in the control and spread of brown rot.

Stone Fruit Spraying

Continued applications for the prevention of brown rot are essential up to picking time. Lime sulphur, 0.083 per cent., plus colloidal sulphur, 50 per cent., at 2 lb.—100 should be applied at intervals up to shortly before picking. All fruits infected with brown rot should be taken and burned and should not be allowed to be carted to the packing shed or dropped upon the surface of the ground.

Cultivation

Light cultivation should be maintained to break up the crust which may form after spring rains and to prevent the compacting of the surface layer of the soil. The conservation of soil moisture and elimination of weed growth by keeping the land in good tilth are essential factors in assisting crop production.

Clean cultivation is also of material help in destroying the larvae of certain orchard pests, mainly bronze beetle, which pass their life cycle in the soil from the egg stage to their emergence as beetles. This pest chews and damages the surface of the young apple, rendering many unmarketable, and is generally found to be more prevalent where cultivation around trees and headlands has been neglected. Control can be obtained by the usual lead arsenate sprays plus clean cultivation.

Packing Shed Hygiene

The cleanliness of the packing shed and the equipment used in the final preparation of fruit for market is important. A common cause of losses in fruit either in transit or storage originates from some slight injury which occurred during handling and at the time was hardly discernible but sufficient to provide ready entrance for fungous spores prevalent in the bins or picking boxes.

Keeping the packing shed floor swept clean where concrete or wood is in use, cleaning bins, etc., on the grading machine, sterilising picking boxes, and promptly disposing of waste fruit to stock or by burying will assist in maintaining clean conditions and in preventing possible sources of infection.

—R. E. BINFIELD, Orchard Instructor, Hastings.

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Citrus Notes

Apply Fertilisers Early

SPRING fertiliser applications should now have been made and worked into the soil in most citrus areas. Early application enables the trees to receive the greatest possible benefit from the plant nutrients supplied. Nitrogen is the element most beneficial to citrus.

Scientific workers indicate that the trees require more nitrogen during the blossoming and fruit-setting period than at any other time of the year, therefore it is important that the application should be made before the blossoming period commences to ensure a good setting of fruit.

Most fertiliser ingredients if not worked in are extremely slow to penetrate below the surface inch of soil, therefore a light digging in where machine cultivation is not employed is extremely beneficial and makes the plant foods immediately available to the main feeding roots. Fertilisers remaining near the surface of the soil are of little use to the trees during relatively dry periods.

Citrus Verrucosis

This disease attacks the fruit and foliage of lemons, mandarins, grapefruit, and citronelle. The Meyer variety of lemon, the citronelle (rough lemon), and the Wheeny grapefruit are particularly susceptible to attack, and consequently require more frequent sprayings than other citrus to secure a satisfactory control of the disease.

Seasonal Work

The early application and working in of fertilisers will give best results.

Apply a 3-4-50 Bordeaux mixture for verrucosis in September or early October.

Complete banding for Dicky rice weevil before the end of October.

A good mulch of vegetation around citrus trees assists greatly in the conservation of soil moisture.

September and October are the best months for pruning citrus.

Bordeaux mixture sprays will give good control of verrucosis only if applied at suitable periods and the application is thorough. If infection during the previous year has been severe, four applications should be made this season, the first in September or early October when the earliest of the main

blossoms are opening, the second early in November, the third about mid-December, and the fourth (for lemons only) during the autumn blossoming period, which is generally in April.

If infection during the past season was light to moderate, the third spray application may be omitted. In cases of very light infection one spring application made at the petal fall period in November will usually suffice.

Verrucosis seldom attacks the fruit after attaining the size of a walnut, but once infected the disease will continue to develop until the fruit is fully matured. Infection frequently can be observed on the very young fruits even before the blossom petals have fallen, consequently early application of the spray is the most important factor in the control of the fungus, the omission of which is the main cause of poor control.

Infected fruits serve as a source of infection for young fruits, consequently they should be removed and destroyed whenever observed during the normal pickings.

Dicky Rice Weevil

The banding of the trunks of trees in areas where Dicky rice weevil is prevalent should be completed by the end of October. This is important because the first brood of adults commences to emerge at the beginning of November, and it is while the fruits are very small that most of the injury occurs.

Injury frequently takes place before the blossom petals have fallen. The banding material should be applied about 2in. wide and to a thickness of not less than one-eighth of an inch. The surface of the band should be rubbed at approximately monthly intervals to break the film which is liable to form on the surface. All branches should be kept clear of the ground, and weed growth or pasture prevented from coming in contact with the branches, otherwise the banding operation is rendered almost useless.

Compost

The limited supply of fertilisers available and greater appreciation of the need for conserving soil moisture during the summer months, particularly in light soils, are factors which are making the use of compost commendable. The benefits to be derived from the mulching of citrus trees are particularly great on account of their surface-rooting nature.

Green material for the making of compost is best grown outside of the orchard area, and as nitrogen is the element of paramount importance for citrus leguminous crops are recommended for this purpose. The use of any kind of animal manure will appreciably enrich the compost and serve as an activator in hastening the decomposition of the green vegetation.

Snails

Extensive injury to the foliage and to a lesser extent the fruit of young orange trees by snails has frequently been observed in recent years, especially in pasture orchards. Damage by this pest is greatest during the spring months. It appears that snails will not ascend the trunks of orange trees in great numbers, but when branches are allowed to come in contact with pasture or weed growth even for a short period large numbers will enter the shaded parts of the trees and remain there for an indefinite period, causing much injury. Control measures suggested are to prevent the weed growth, pasture, or mulching material coming in contact with the tree.

—P. EVERETT, Orchard Instructor, Kerikeri.

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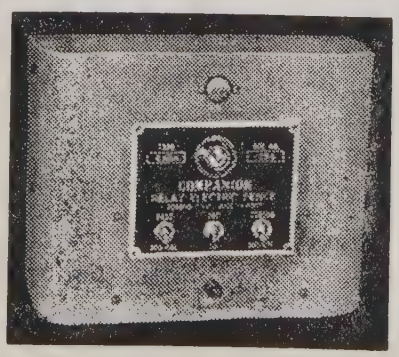

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Guide for the Home Garden

Work for October

AT the present time it is important that every effort should be made to secure the maximum production from the land. Included in this national effort is the production of vegetables in the home garden, and to no other primary produce does it apply with greater force.

An even more urgent spur to action—if that were possible—than the former slogan "Dig for Victory" is the growing recognition of the nutritional value of vegetables as human food, especially when they are fresh.

It should not be assumed that the same necessity for the home gardener to produce vegetables to the limit of his capacity does not exist to-day as compared with 12 months ago. Vegetable-processing plants at present operating in the Dominion are using extremely large quantities of vegetables, principally produced by commercial growers, which are being transported overseas.

Handicapped as the commercial vegetable-producer is with regard to man-power, it should be obvious that, at certain periods, the absence of those vegetables from the ordinary channels of distribution must affect supplies which ordinarily would be available to the consumer. Hence arises the prime necessity for maintaining and, if possible, for increasing production of vegetables in the home garden. The gardener who is utilising his area of land in quite the orthodox manner, according to suggestions, instructions, and, maybe, directions, will naturally ask "How?" This question can partly be answered, "By intercropping."

Intercropping

Intercropping may be defined as the production of more than one crop at the same time on land which in accordance with the usual methods of production would be growing a single crop.

The advantages of such a system may be summarised as follows: (1) More vegetables could be produced on the same area of land at the same time; (2) earlier setting of plants may be made, instead of waiting for the occupied area to be cleared of the growing crop; (3) it would prevent plants from being held too long in the seed-bed.

The disadvantages may be stated as: (1) Inter-row cultivation is more difficult; (2) weeds are harder to control; (3) the system requires more forethought than ordinary cropping; (4) more attention to detail is necessary; (5) a richer soil is essential; (6) a higher state of soil fertility must be maintained.

It will be obvious that not every variety of vegetable plant is suitable for intercropping. Provided the system commends itself to the intelligent gardener, the following brief reference is made for consideration and guidance. Lettuce may be set out any time now, along the line of the prospective tomato row. As in most recognised tomato-growing districts Labour Day is considered the safe planting date, the lettuces should all be harvested before the tomato foliage has spread enough to injure them. Early peas or potatoes may, after final "banking," be intercropped with well-grown plants of any of the autumn-maturing brassicas. Between the rows of late dwarf peas or beans spinach, turnips and radish seed may be sown. The latter are quick-maturing crops and can, with distinct advantage, be extensively used for intercropping.

Tomatoes

Young seedlings not yet pricked out to be grown for planting where they should bear their crop will be in danger of becoming too old to be removed with safety. In this case they may be thinned out where they are growing, sufficient space being allowed between the plants which remain. Thinning should not be done by pulling out the unwanted seedlings; these are best cut at ground level with scissors.

This method, as a substitute for "pricking out" the seedlings, however much of a short-cut it may appear to be, cannot be recommended. A seedling box 12in. x 12in. by 2½in. deep will comfortably accommodate 18 plants. If the plants are equally spaced the area is ample and, with proper care, will produce strong plants with a good, vigorous rooting system.

When transplanting the seedlings hold them by the leaves and drop them into the holes made in the soil almost to the first baby leaves on the

Don'ts

DON'T
Permit the tops of potatoes to meet between the rows before starting to "bank" them with soil. This makes the work more difficult, and some of the haulm is sure to get broken.

DON'T
Cut asparagus spears just anyhow. They are best cut in a downward sloping manner with a knife shaped like a carpenter's chisel.

DON'T
Cut rhubarb stalks or pull them straight up. The stalk should be gripped firmly as near as possible to the crown and given a slight jerk downwards, then a quick pull.

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stem. The soil should be gently but firmly pressed round the stem of the young plant. When pricking out is completed the box with the seedlings should not be exposed to the direct rays of the sun until they have become properly established. This precaution is very important. If and when the soil in the box may become too dry soaking in a basin or washtub is the safest way of watering. See that the top soil does not become wet. If the potting soil has been sterilised, the seedlings can be watered in the ordinary way. Pricking out for early planting should be completed before the end of September.

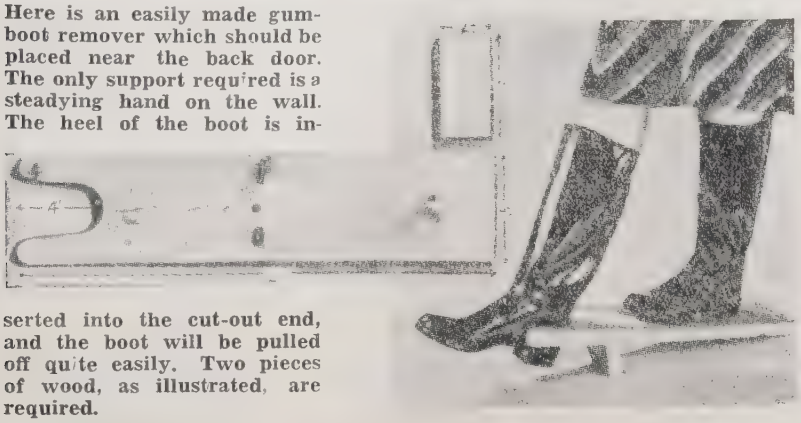
As soon as young kale plants can be conveniently handled it is advisable to have the early bed planted out. Set deep, and well watered in, with a subsequent application of liquid manure after copious watering, the plants will be brought forward so that they will be fit to use before the onion crop can be harvested.

In the rush of gardening operations which require a lot of attention during October the shallot bed should not be neglected. In any kitchen garden this is a valuable crop from which, if proper and adequate attention is given, good returns will be obtained. Keeping the plants clear of weeds and the soil well cultivated—always shallow—is the best practical means of securing correct development of the bulbs. Water regularly, but be sparing with liquid manure. Nitrate of soda or sulphate of ammonia should not be used.

Peas at present growing should either be assisted to keep clear of the ground by staking, wire-netting, or light brushwood (manuka), or banked with soil hoed up from between the rows. Another sowing can now be made, and one of the taller varieties used. Greenfeast, Stratagem, or Richard Seddon are suitable, and will constitute the main crop. As all these are tall growers (3 to 3½ft.), 6in. should be allowed between the plants.

HANDY GUMBOOT REMOVER.

Here is an easily made gumboot remover which should be placed near the back door. The only support required is a steadying hand on the wall. The heel of the boot is inserted into the cut-out end, and the boot will be pulled off quite easily. Two pieces of wood, as illustrated, are required.



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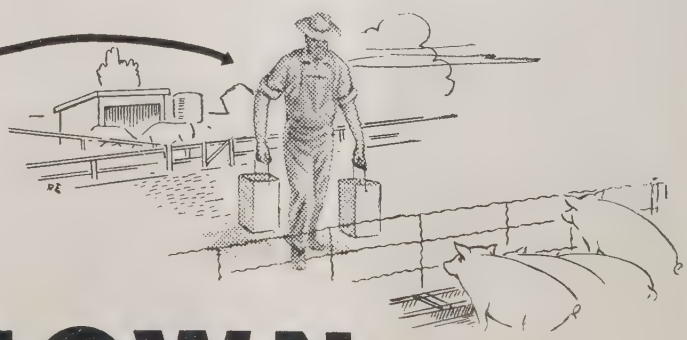

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Melons, Pumpkins, Squash

In areas where danger of frost is past seeds of these and all other gourds may be sown outside. Six feet each way between the "hills" is the recognised spacing, with the exception of rock melons, which require 8ft. The use of abundant organic matter, particularly stable or farmyard manure, is a prerequisite for success in this crop, as also is plenty of water, accompanied by adequate drainage. The seed should be sown at the required distances. 5 or 6 to each "hill," and when the plants are well up should be thinned to 3. Superphosphate may then be applied, two handfuls to each hill, and worked into the soil. Pumpkin varieties recommended are Triamble and Queensland Blue.

Vegetable marrow seed can also be planted out at this time; but for a home garden the bush variety, Long White Bush, is recommended. Three or four plants can be grown on one hill and the spacing should be 3ft. each way. They will not trail all over the garden, but grow like a bush about 2ft. high and with a diameter of 3 to 4ft.

With other than broad beans not much is gained and a great deal may be lost by planting seeds of either dwarf or climbing varieties before the danger of late spring frosts is past. An early sowing may get through all right, but the produce as well as the plants is often stunted and not up to the usual quality. Later sowings will invariably mature before them.

Scarlet runners—a climbing variety—when grown as a biennial will usually shoot into early growth before the dwarf varieties. If frost is at any time expected, it is advisable to protect them from getting cut back. Where home garden space is limited a climbing variety of bean is recommended for production. The most economical and best practical method of growing is along a fence, up wire-netting, or up a tripod, which may be of wood or old pipes or boiler tubes and fastened near the top. By this means a very small part of the garden is utilised and the plants will continue to bear much longer than any dwarf variety. They may be a bit longer coming into bearing, but where beans are specially required a few dwarfs can be sown and picked while the climbers are maturing.

As soon as the beans are usable they should be harvested; to permit them to ripen on the vine will cause the plant to cease production. With this crop the maxim, "Eat what you can, and can what you can't," should be remembered.

Where there is enough room to spare cape gooseberry, a frost-sensitive but useful plant, can be very easily grown. Seed may be sown in boxes early in October, if protected, and the plants later pricked out for setting where they will grow to maturity. They can be treated, so far as propagation is concerned, in substantially the same manner as tomatoes. It is not necessary that the area of ground used should be heavily manured; but if fertilisers are applied potash should not be omitted. The planting distances should not be less than 3ft. each way between the plants This spacing may be altered to 4ft. between the rows and 2ft. between the plants in the row.

When celery seedlings have been pricked out they should not be left neglected on the assumption that they do not require further attention. Between the plants the soil should be maintained weed-free and kept stirred to prevent rapid drying out. A watch should be kept for any indication of the leaves turning yellow. If and when this may happen, liquid manure should be applied, the quickest in effect being nitrate of soda, 1 teaspoonful to 1 gallon water. Also, regular inspection should be made for the appearance of small water-soaked spots which will be first seen on the underside of the leaves. When this disease spreads the leaves also turn yellow, so that it is important to distinguish between the symptoms referred to. In the latter instance the prevention lies in spraying the young plants with Bordeaux mixture at half the usual strength, i.e., 2oz. bluestone, 2½oz. lime, and 4 gallons water. The celery plants can be treated when the tomato plants are being sprayed.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

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Seasonal Work for Beekeepers

Detection and Prevention of Foul Brood

WITH longer days and warmer weather beekeepers will be able to make a more thorough inspection of all colonies. Keep a watch on stores, as very little nectar is ever gathered during this month except from those apiaries situated in the far north or those adjacent to native bush or areas of heath. Bees will be noticed bringing in loads of pollen. This is a good sign and generally is an indication that brood rearing is going ahead.

Water Supply

In addition to honey and pollen required for feeding the larvae the bees require access to a supply of water. It is always during the spring months that the water gatherers will be noticed collecting a supply from the edges of streams or moist land. Where this is not available they are forced to frequent water troughs and dripping taps and very often cause annoyance to stock and sometimes neighbours.

Where no natural water supply is available within easy reach of the bees the beekeeper should endeavour to rectify matters. This can be done by placing a bath or tub of water out near the apiary and covering it with a sack so that it floats on top of the water, thus allowing the bees to get their requirements without being drowned.

In areas that are sparsely watered or where swift streams run between steep banks a suitable water supply should be provided, especially during the spring months. When the main honey flow commences there is sufficient humidity in the hive and the need for water is not so great.

The aim of the beekeeper from now on should be to see that all colonies are gradually building up so as to reach maximum strength at the commencement of the main honey flow. Keep a sharp look-out for any signs of disease, especially foul brood, as serious outbreaks of this disease may mean the loss of a crop.

American Foul Brood

This disease (*Bacillus larvae*), which is by far the most destructive and dangerous of all brood diseases, is, as its name implies, a bacillus that affects the brood. American foul brood is exceedingly virulent when once it has gained a foothold in a colony. The germs of the disease are conveyed almost exclusively in food that has been in contact with combs containing the remains of larvae which have died of the disease. The causes of spread from one colony to another in an apiary are usually traceable to the acts of the beekeeper, such as the manipulation of diseased colonies during a period when bees are inclined to rob; moving combs from colonies that harbour the disease to healthy ones, or exposing honey which contains the spores of the disease.

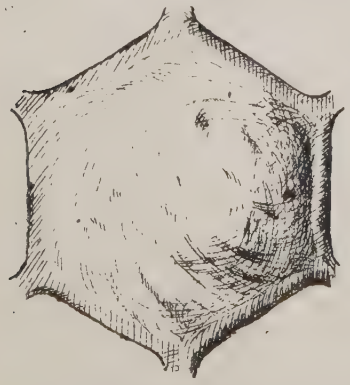
When a diseased colony has become weak, or has died out from the effects of American foul brood, it will generally be robbed out by other bees and the infection spread by that means. Every beekeeper should, therefore, endeavour to familiarise himself or herself with the appearance of this ailment, and thereafter always keep a sharp look-out for the earliest signs of its onset, whenever brood combs are under examination, so that steps may be taken to eliminate the infection before it has become widespread. Section 8 of the Apiaries Act requires every beekeeper to notify the instructor of the district within seven days of any suspected outbreak of foul brood.

Symptoms

Except in very advanced infections of American foul brood, when death may occur earlier, the brood in this disease always dies after the sealing of the cell; that is, after the grub has ceased to feed, has become fully grown, and is stretched at full length on its back ready for the change into the pupa stage of its existence.

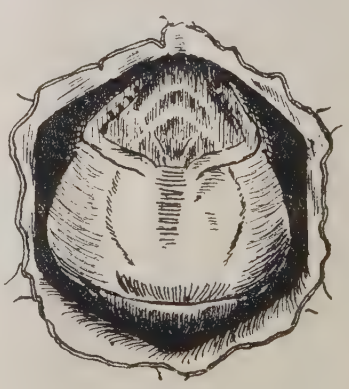
An infection begins when the spores of the disease are included in the food that is fed to the larvae. As soon as the right condition has been reached the spores become converted into active bacteria, which grow rapidly and multiply at an enormous rate by dividing into two parts. Each of these two divisions again divides, and so on until in a short time the larva dies, overwhelmed by millions of germs.

The rapid death of the grub attacked is not to be wondered at. Death then takes place after the larva has reached its full growth and is stretched along the bottom of the cell, and this gives a remarkable uniformity to the remains of the grubs which have died of this disease.

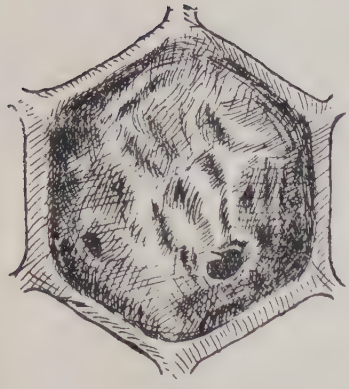


Capping of healthy brood, convex in appearance and usually light in colour.

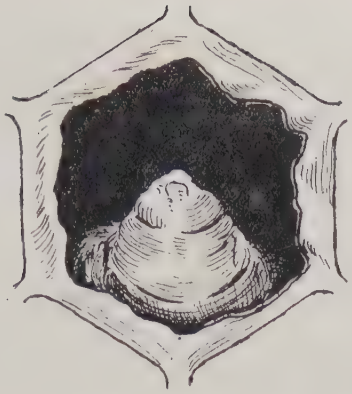
Healthy larva, pearly-white in appearance.

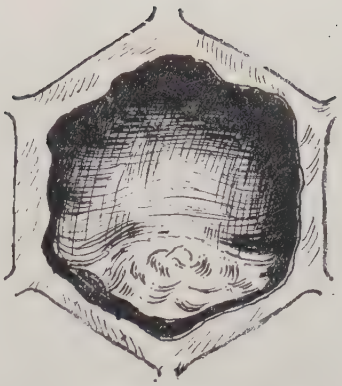


Healthy pupa, pearly-white in appearance except last few days before hatching.



Capping of cell indicating dead brood, concave in appearance and from dark brown to black in colour.





Larvae affected with foul brood *(Bacillus larvae)*. On opening the cells larvae have commenced to break down in appearance and go coffee brown in colour.

The first indication to the average beekeeper that anything is amiss is the changed appearance in the capping of odd cells. Normal, healthy brood when capped over has cappings of uniform colour and convex in shape. Cells with diseased larva will be seen with dark-coloured cappings, which are sunken and sometimes perforated. When the cappings of these suspicious cells are broken conditions will be found far from normal, i.e., instead of exposing to view a pearly-white inmate a brownish-coloured mass is seen.

At first, soon after death, the remains are quite liquid, but they slowly dry up and, passing through all the stages from fluid to a hard, dry scale, finally adhere tightly to the lower wall of the cell, from which they are very difficult to remove. At certain stages of this drying-up process the remains become exceedingly viscous or ropy, and if a small stick is inserted this disintegrated material may be made to pull out into a fine thread, which may stretch like a piece of elastic for an inch or two before breaking.

Another symptom is the peculiar, characteristic smell associated with the disease. It is frequently described as like melting glue, and once experienced is not readily forgotten. The drawings herewith will help beekeepers in diagnosing an infection of American foul brood.

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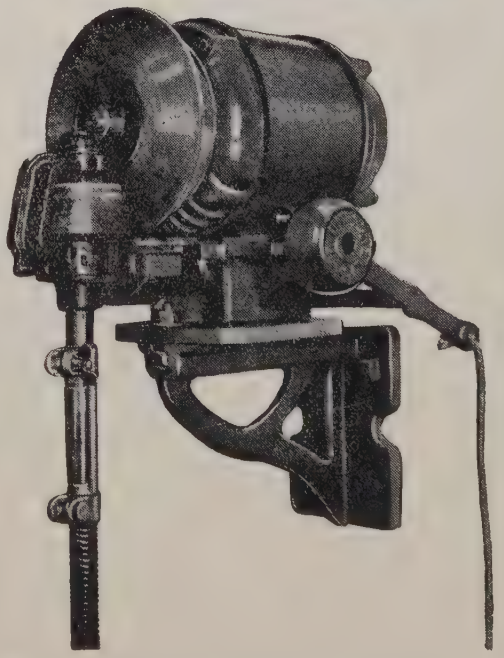

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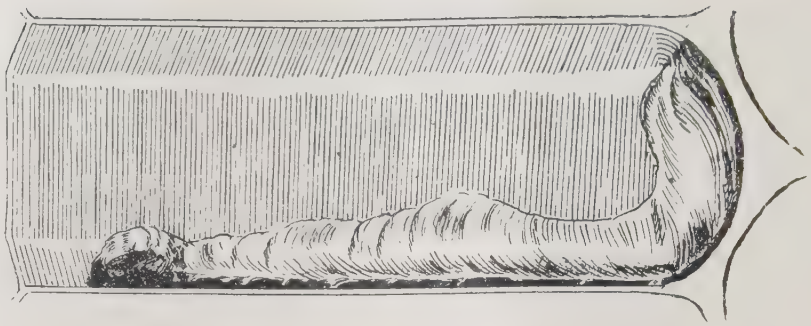
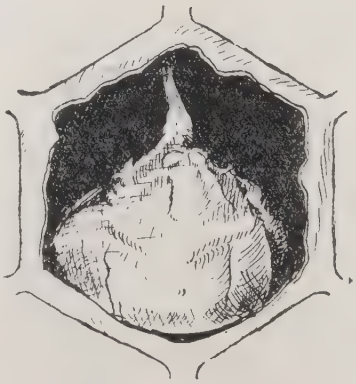
Prevention

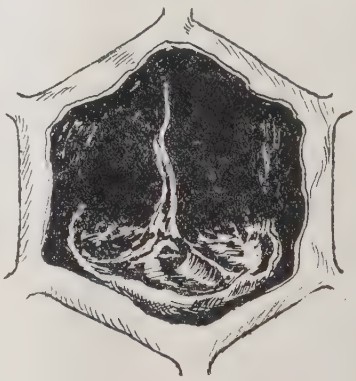
In order to obviate the chances of an apiary becoming infected beekeepers should follow certain rules. Be extremely cautious in purchasing any bees or equipment until satisfied everything is free from disease. Never feed honey to bees unless absolutely sure of its origin. Make yourself familiar with the disease and its appearance so as to pick an infection before it gains a strong hold.

Burning

Experience over many years in dealing with foul brood infections has shown that in the majority of cases the most satisfactory and cheapest way in the long run is immediately to burn all infected colonies. This is usually done in the evening when all bees have ceased to fly about.







At right, upper—Scale form of ilarva adheres firmly to lower wall of cell and is generally brownish-black in colour.

Lower—Pupae affected with foul brood. Melting down and decay of pupae, with final formation of scale. Note: Tongue remains erect in centre of cell.

Copies of illustrations are taken from the U.S. Department of Agriculture Bulletin No. 1713.

Outlay to Establish 100 Colonies

IN view of the increased demand for bees and equipment the following list has been drawn up showing the actual capital outlay at present-day prices in establishing 100 colonies of bees and sufficient supers to handle a crop. The prices quoted are drawn from price lists of firms turning out standard quality equipment. It is hoped that these figures will assist in determining the value of any established colonies that may be for sale, due regard being given to the age and condition of the equipment as compared with new material.

The labour assessed in assembling equipment is based on the output of the average methodical worker.

The above figures can be taken as the maximum cost at which hives can be established. The beekeeper who is handy with tools and has a knowledge of carpentry will see many avenues in which this price could be reduced to a lower figure.

C. R. PATERSON,
Apiary Instructor,
Hamilton.

PRESENT COST OF MATERIALS

	£	s.	d.
SUPERS: 400 at 3/3 each	65	0	0
FRAMES: Full depth Hoffman. 3,300 at 25/- per 100 (100 hives with 10 frames each, 300 supers with 9 frames each) (Less 400 frames supplied with nuclei)	41	5	0
LIDS: 100 with metal covers at 5/3 each	26	5	0
FLOOR BOARDS: 100 at 3/3 each	16	5	0
FOUNDATION COMB: 413 lb. (medium brood) Beeswax at 2/- per lb., plus cost of converting into foundation with freight in and out, 10d. per lb.	58	10	2
NAILS for supers, lids and floor boards, 32lb. at 1/- per lb. (Approx. 320 2-inch cement-coated nails to the 1lb.); Frames, 15lb. at 10d. per lb. (approx. 1 200 1¼-inch cement-coated nails to the 1lb.)	2	4	6
WIRE: 12lb.	2	13	0
PAINT: Primer, 4 gals. at 25/- 5 0 0 2 and 3 coat, 4 gals. at 35/- 7 0 0 1 gal. oil 19/- 19 0	12	19	0
One gal. thick primer covers approx. 80 supers. One gal. 2 or 3 coat covers approx. 160 supers.			
NUCLEI: 100 4-frame at 32/6 each, delivery October	162	10	0
Freight on nuclei and material (based on 50 miles rail freight)	7	10	0
	395	1	8
SUPPLEMENTARY FEED: 10lb. sugar to start off each nuclei, 15 bags at 23/-	17	5	0
	£412	6	8

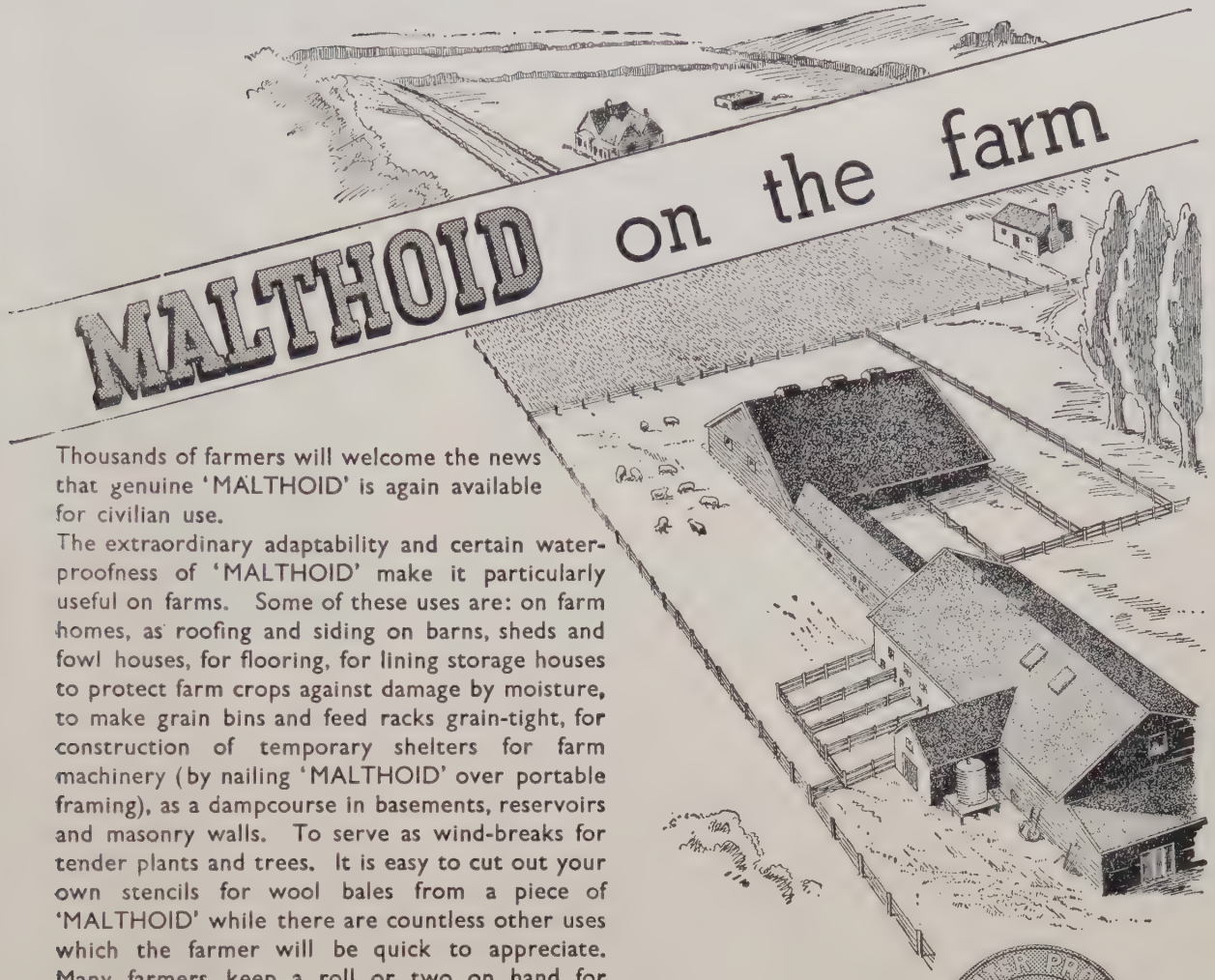
ASSEMBLING STATISTICS

	Hrs.
LABOUR:	
SUPERS: Painting ends and nailing up 8 per hr.	50
Painting—priming coat, 20 per hr.	20
2 and 3 coats, 35 per hr.	23
LIDS: Assembling woodwork & painting, then fitting metal cover, 4 per hr.	25
FLOOR BOARDS: Nailing and painting, 12 per hr.	8
FRAMES: Nailing up, 50 per hr.	66
Wiring (3 parallel wires), 40 per hr.	82
Fitting foundation, waxing, and electric embedding, 80 per hr.	41
	315 hrs.

Labour based on 2/6 per hour £39 7s. 6d.

Establishment cost is therefore £451 14s. 2d., or approx. £4 10s. 4d. per colony.

MALTHOID on the farm



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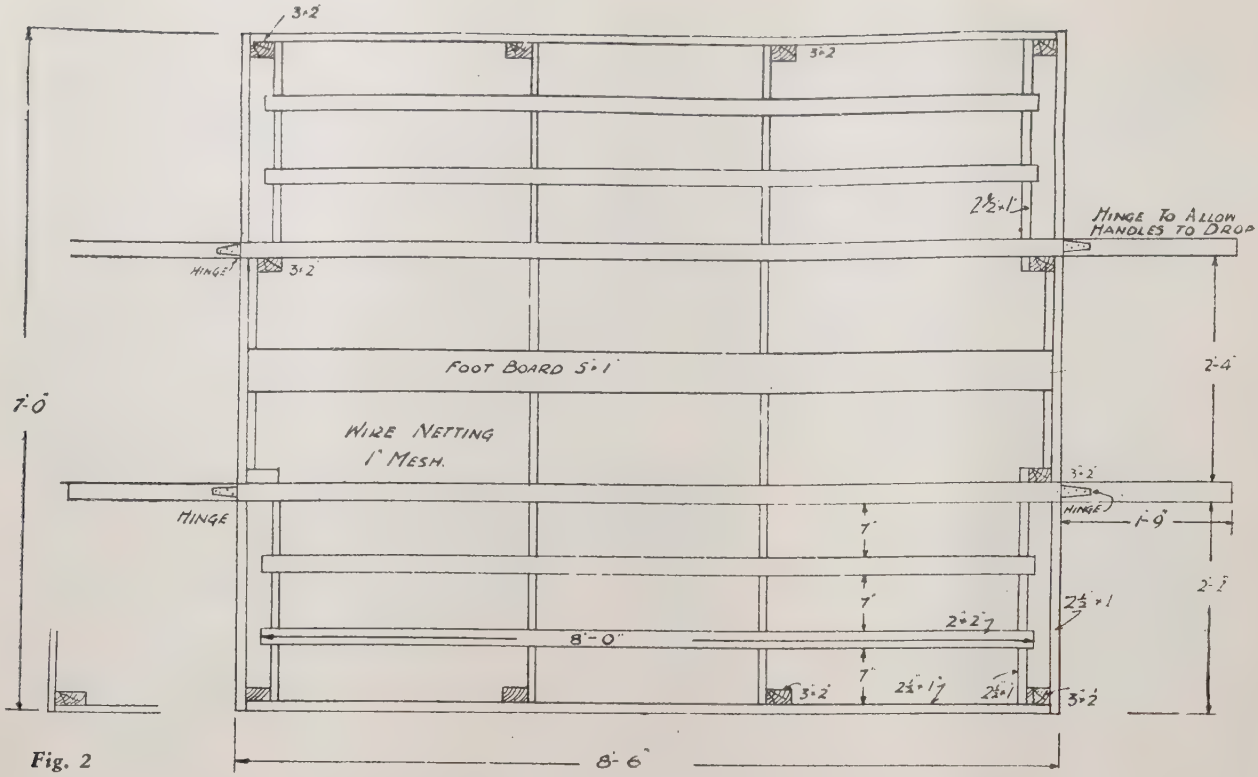


Fig. 2

PLAN SUMMER RANGE SHELTER

Note: Read "2 in. x 1 in." for "2½ in. x 1 in." in every case. Hinges on the handles are not recommended.

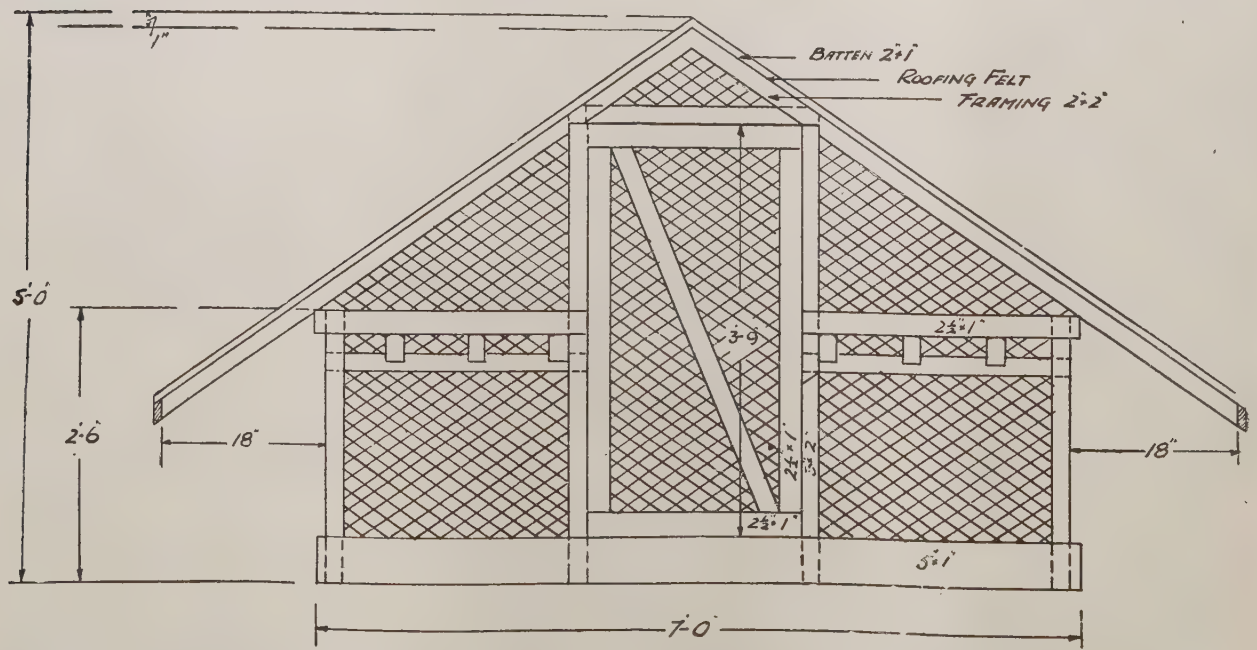


Fig. 3

FRONT ELEVATION

Notes for the Poultry Farmer

Houses for Growing Stock

Fig. 1

FOLLOWING the brooding period during chick-rearing, when the birds require some source of heat, comes what is usually termed the "growing" stage. During this period it is highly desirable that the young cockerels and pullets should make the maximum of growth, prior to reaching sexual maturity, and at the same time have the opportunity of building up a sound constitution. Good growth and a sound constitution are essential if the birds are to withstand the strain of heavy production as adult stock.

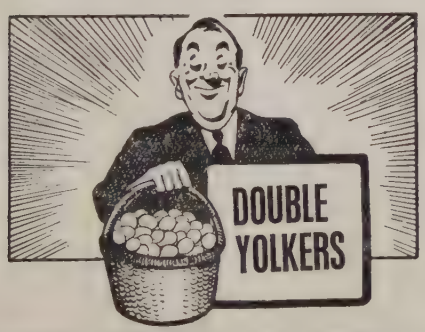
Opinions may vary as to the best method of achieving these essentials, but few will disagree with the suggestion that free-range management on ample, clean ground is the best method of rearing pullets and cockerels during the growing stage. It is for this reason that types of housing suitable for use under these conditions receive first attention.

Summer Colony-houses

This type of colony-house is one that can be quite easily moved, and while providing the birds with ample protection against inclement weather it gives a maximum amount of fresh air. From the illustrations (Figs. 1 and 3) it will be noted that the sides and ends of the house are constructed of wire-netting, but, since the perches are set above the level of the eaves of the roof, neither wind nor rain can strike the birds from either side of the house. It is desirable, therefore, that the house be placed in such a position that one of the sides is towards the prevailing wind and rain. The floor of the house is also constructed of wire-netting, and it should be noted that 1½in. mesh 17-gauge netting is satisfactory for this purpose. Unless vermin—rats, etc.—are particularly troublesome, smaller-mesh netting is not necessary, and is, in fact, a disadvantage as the birds grow older. Small-mesh netting tends to accumulate the droppings, whereas larger-mesh netting allows them to pass through.

The roof may be made of timber and covered with a roofing felt.

— By —
F. C. BOBBY,
Superintendent Poultry Husbandry, Wellington.



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Asbestos can be used, but the house must then be made very rigid and care taken when it is moved. Moving the house is facilitated if runners or skids are fixed to the floor.

While this type of colony-house is an innovation to New Zealand, it can be stated that it has now received a full trial at the Government Poultry Station, Wallaceville, and has proved most successful. Furthermore, it is now used by a number of commercial poultry-farmers who have expressed their satisfaction with this type of house.

A house constructed to the size given in the illustrations is capable of carrying 45 to 50 cockerels and 60 pullets until they are required for transfer to permanent housing. Obviously far larger numbers may be housed at 7-8 weeks of age, say 100 pullets or cockerels, but these numbers must be reduced to those first quoted before the birds reach four months of age.

Fig. 4 gives a diagram of a second type of colony-house used at the Government Poultry Station. This house is more solid in construction, and has the advantage of collecting rain-water from the roof. Its capacity is slightly greater than that of the house already described, but far more care must be taken to see that over-crowding does not occur. For obvious reasons the amount of air passing through this house is not so great as in the type previously mentioned, and in consequence over-heating and colds can occur more easily.

Intensive Growing-house

For those interested in intensive management of growing stock Fig. 5

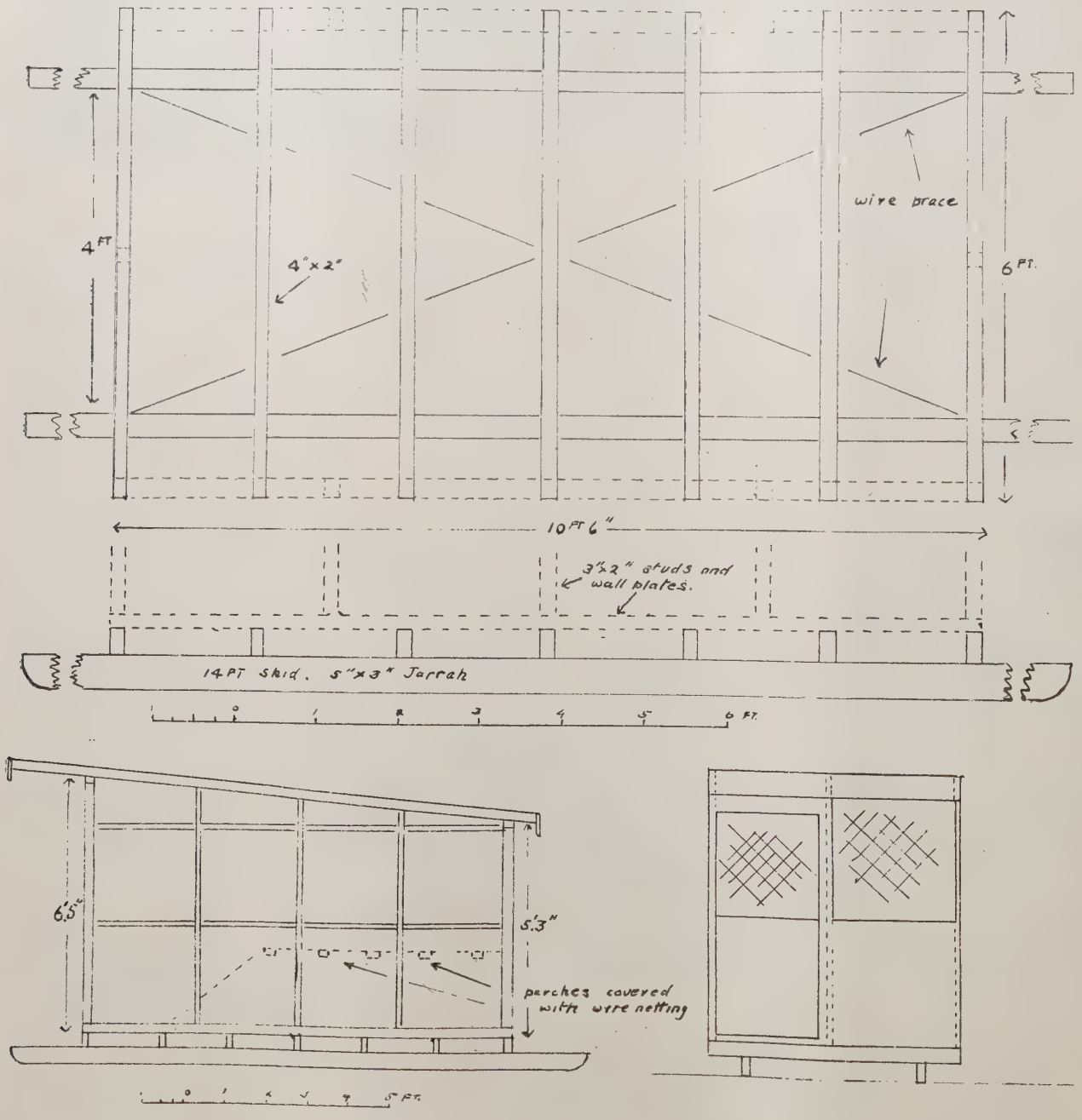

Fig. 4

Fig. 5—**Intensive growing-house used by commercial poultry-farmer.**

shows an intensive growing-house used by a large commercial poultry-farmer. It will be seen that this house is divided into pens, and that the front is constructed mainly of wire-netting. In this way the birds obtain the maximum amount of sunlight and air. Since the house has not a hood or other protection at the front it will be appreciated that it is a type more particularly suitable for sheltered situations. Each pen is 10ft. x 10ft. in size, with the height at the front and back 6ft. 3in. and 4ft. 8in. respectively. Approximately 100 six- to seven-weeks old pullets can be carried in one of these pens up to four months of age, when the number should be reduced to 75. These birds may then be run on until transferred to the laying-houses.

It may be added here that these houses are not recommended for growing cockerels required for stud purposes. With regard to perches, these are placed at the back of the house, and it is recommended that they be covered with wire-netting, which is carried on a frame down to the floor. In this way the young birds are prevented from scratching in the nightly accumulation of droppings, and are thus given some protection against the spread of coccidia or worms, should the birds become infected with any of these troublesome internal parasites.

There are many other types of housing used for growing stock, of which Fig. 6 affords a further example. It is not possible to state that any one particular type is the best for all purposes. Providing the principle of supplying the birds with ample fresh air, without draughts, and adequate perching-room is kept in mind, a wide range of housing may be used successfully.

Fig. 6—**Another example of a growing-house.**

Duck-farming: A Warning

IT will have come as a surprise to some duck-farmers to discover recently a slight falling-away in the price of duck eggs as compared with the normal decline in hen egg prices at this time of the year. Undoubtedly this drop in price will be unexpected to those who have only recently taken up duck-farming, but to others who have been keeping ducks over a period of years this depreciation in the value of duck eggs is not likely to have been a surprise.

The plain facts are that duck eggs have never been so popular with the public as hen eggs, and in consequence a saturation point on the market during the flush season of eggs occurs long before the same point is reached in respect to hen eggs. This falling-away in price is a timely warning to duck-farmers that flocks have now reached an aggregate which should not be increased appreciably if a serious slump on the duck-egg market is to be avoided next season. A similar position existed prior to the acute shortage of eggs during the past two years, and the old hands in the industry will not be surprised to see this position returning now that the number of ducks in the Dominion is again increasing.

It is obvious therefore, that duck-farmers must refrain from increasing their flocks, and also, which is just as important, refrain from boosting the sale to newcomers to the industry of duck hatching eggs and day-old ducklings. Unless a policy is adopted which will stabilise the present number of ducks kept and prevent any further boom in the duck industry, all concerned will be embarrassed next season when the market becomes flooded with duck eggs.

Officers of the Department of Agriculture have sounded a note of warning along these lines for the past year, and the Rehabilitation Department was warned months ago to discourage returned servicemen from going into duck-farming without giving very careful thought to the matter beforehand.

The lack of popularity of duck eggs is not confined to New Zealand. The same position obtained in Great Britain prior to the war. The price for duck eggs was usually below that of hen eggs, with the exception that a limited number of centres, or markets, would absorb relatively easily all duck eggs offering when ruling prices were similar for the greater part of the year to those paid for hen eggs.

While the comparative unpopularity of duck eggs is unfortunate, the fact has to be faced that only a limited market exists. Those interested in duck egg production will be wise to act cautiously during the present rearing season. The warning has been given, and should be heeded now.

Federation of Young Farmers' Clubs

Report of Tenth Annual General Meeting

THE Tenth Annual General Meeting of the Y.F.C. Federation was held at Timaru on Friday, July 21, and was attended by the following:—Mr. T. E. Streeter (Dominion president, in the chair); Messrs. S. G. Avery (Dominion vice-president and chairman of the Wellington Council), D. S. Ross (immediate past president); A. S. Trotter, (chairman, Otago-Southland Council); R. Wightman, jun. (chairman, Canterbury Council); K. J. Hargest, C. E. Haslam, W. King, D. McPherson, E. Rabbidge, jun., W. A. Young (Otago-Southland Council), J. Barclay, W. S. Crotty, R. S. France, E. Gibb, E. W. Hall, D. Hurford, A. W. McKay, A. W. McKenzie, S. A. La Roche, E. P. G. Temple (Canterbury Council); M. Donald, J. L. Sunderland, A. D. Young (Wellington Council); G. Spratt (Auckland Council); R. G. Jolly (secretary, Canterbury Council); C. C. Leitch (secretary, South Canterbury District Committee); J. H. Pennycook (South Canterbury), S. Bruce, T. Greenall, R. C. Hibby, O. H. Neutze (Geraldine); P. Agnew, N. B. Chapman, I. Forrest, H. W. Jackson (Pleasant Point); A. Ward (Southburn); G. B. Armstrong, L. T. Armstrong, Wm. Birnie, C. E. Davis, J. S. Harris, I. C. Hurst (Waihaorunga); and S. Freeman (Dominion organising secretary). Mr. B. Switalla (National Federation of Young People's Clubs) was present by invitation.

Apologies were received from Messrs. L. J. Wild (grand patron); A. C. Cameron, and W. F. McLaren (past presidents); P. W. Smallfield (Director of the Fields Division, Department of Agriculture); F. S. Atcheson (chairman, Auckland Council); W. A. Jacques (Massey College); J. H. Bremner and A. P. O'Shea (N.Z. Farmers' Union); C. H. Schwass (Department of Agriculture); K. I'Anson, W. P. Nicholl, B. Vant, A. F. Walter (Auckland Council); N. Blatchford, B. J. Collerton, H. McKenzie (Wellington Council); H. L. Chisnall, H. G. Stephens (Canterbury Council); W. R. Harris, S. R. Whyte, J. W. Wilson (Otago-Southland Council); W. G. L. King (Okoroire).

The meeting stood in silence for a few moments as a mark of respect to those members who had made the supreme sacrifice; the deepest sympathy was expressed with their relatives and friends. The secretary was instructed to write, on behalf of the federation, to Squadron Leader E. W. Barnett (a past president of the federation) congratulating him on his decoration (A.F.C.) and expressing the members' sympathy with him in his recent serious illness, with hopes for a speedy recovery.

The chairman, in welcoming delegates and members, referred to the benefits and value of the Y.F.C. movement, and expressed his appreciation of the very evident enthusiasm that had brought members together from all parts of the Dominion. The gathering was a very representative one, despite difficulties of transport and extensive travel entailed. He was pleased to see strong representation from local clubs, and invited all present to take part freely in discussion.

The annual report (published in full in last month's issue) and the balance sheet (which appeared in the July number of the Journal) were read and adopted.

Election of Officers

The officers of the federation were elected as follows:—**Grand patron,** Mr. L. J. Wild (president, Royal Agricultural Society); **Patrons,** Sir Wm. Perry, Sir Heaton Rhodes, Sir Theodore Rigg, Sir Albert Ellis, Hon. Ben Roberts (Minister of Agriculture), Mr. W. Mulholland (Dominion president, N.Z. Farmers' Union), Mr. Wm. Goodfellow, Mr. A. C. Cameron, Mr. W. F. McLaren, Professor E. R. Hudson (Lincoln College), and Professor G. S. Peren (Massey College). **Dominion president,** Mr. T. E. Streeter (re-elected); **Dominion vice-president,** Mr. S. G. Avery (chairman, Wellington Council); **hon. treasurer,** Mr. C. H. Schwass; **hon. auditor,** Mr. O. G. Thomas; **Federation's representative on the National Council of Primary Production,** Mr. D. S. Ross; **representative on the Dominion executive of the N.Z. Farmers' Union,** Mr. J. Barclay.

A brief report on the organisation throughout the Dominion and the prospects of the movement was given by the organising secretary, Mr. S. Freeman. Reports from sub-committees were also received as follows: Y.F.C. memorial (report given by Mr. G. Spratt, chairman of sub-committee); cultural and aesthetic values (Messrs. A. S. Trotter and W. King); scholarships (organising secretary); Y.F.C. propaganda film (Messrs. Trotter, King, and D. McPherson).

Correspondence with the Minister of Education was read, in which the federation was invited to appoint a delegate to attend the Education Conference to be held at Christchurch during

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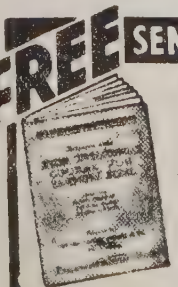

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October, and to express its views and make recommendations on rural education. The vice-president (Mr. S. G. Avery) was selected as delegate, and a sub-committee, consisting of Messrs. L. J. Wild (grand patron), T. E. Streeter (Dominion president), D. S. Ross (immediate past president), and the organising secretary, was appointed to prepare the report and make recommendations.

Mr. B. Switalla, of Christchurch, as delegate from the National Federation of Young People's Clubs, was welcomed by the chairman, and invited to speak to the meeting. Mr. Switalla, in his address, extended fraternal greetings from his organisation, with every wish for the success of the meeting. He explained in detail the aims, objects, and activities of the Young People's Clubs, and directed attention to the need of greater understanding between town and country. He answered questions regarding his organisation, and suggested ways and means whereby the two movements could assist one another to their mutual benefit. Mr. Switalla was accorded a hearty vote of thanks.

The matters of leadership, rehabilitation, and life membership were referred to the Dominion executive committee for further consideration. A motion, of which notice had been duly given, was carried, to alter the constitution so as to give authority to the annual general meeting to elect life members on the recommendation of the Dominion executive committee; the authority was previously vested solely in the executive committee itself. A further motion requesting that provision be made for girls with genuine interest in farming to be admitted to clubs with full privileges of membership was defeated.

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Remits

A series of six remits dealing directly with rehabilitation, and received from the clubs among the troops in the Pacific, was referred to the Minister of Rehabilitation for consideration.

Among the general remits carried were the following: "That it be a recommendation to all clubs to open accounts under the National Savings Bonds scheme, with the idea of devoting the whole or part of the amount to the Y.F.C. memorial fund." "That the urgency of the problem relating to the spread of *nasella tussock* be brought to the notice of the farming community generally, and that the need be stressed for the undertaking of definite action in connection with its eradication." "That the federation supports the establishment of at least one agricultural experimental farm south of the Waitaki." "That it be a recommendation for the annual general meeting to be held in the last week in June, or not later than the first week in July." "That the federation compile a booklet on chairmanship and secretaryship, having regard to the need for the inculcation of such attributes as leadership and citizenship, it being considered that a booklet of this nature would be of inestimable value to clubs and to individual members" and "That the federation formulate a policy whereby the organisation can encourage the production of greater quantities of foodstuffs for the United Kingdom."

In connection with the last-named remit a representative sub-committee was appointed, consisting of four members from both islands, with full powers to act.

The whole matter of production occasioned considerable interest and discussion, and the motion, proposed by Mr. D. S. Ross and seconded by Mr. J. Barclay, as follows: "That this Federation of Young Farmers' Clubs is deeply conscious of the necessity and urgency for foodstuffs for the people of the United Kingdom and the Allied Nations, and pledges itself to do all within its power through its various units to encourage a policy of maximum production of foodstuffs," was carried unanimously.

A well-attended meeting of the Dominion executive committee was held on the evening prior to the annual general meeting, and proved very helpful in the matter of preparation and recommendations for the main meeting. On account of the volume of business to be dealt with and the limited time available for doing justice to a lengthy agenda, the advisability of extending the annual general meeting to two days in the future is to be considered by the Dominion executive committee.

Visiting members were hospitably treated by the South Canterbury district committee, the entertainment arrangements including a visit to a linen flax factory, an evening at the pictures, and a social and dance in the evening following the annual general meeting.

Mid-Canterbury: Debate for Rotary Cup

IN one of the best debating competitions ever put on by the Young Farmers' Clubs of Mid-Canterbury the A team of the Methven Club won the Rotary Cup from the Hinds Club, the winners of the competition last year. The points were 286 and 268. Methven B and Ashburton tied for third place, this being the first time in the history of the contest that a tie has occurred.

The teams were:—Methven A: Messrs. A. McKay, G. Limbrick, and R. Wightman, jun; Hinds: Messrs. J. R. Cocks, K. McConnell, and W. Taylor. Methven B: Messrs. J. Dixon, S. Callaghan, and W. Stevens; Ashburton: Messrs. S. Watson, H. Bennett, and F. Amos.

The subjects were: "That New Zealand Farms should be State-owned" (affirmative, Methven A; negative, Hinds); and "That the Future Health of New Zealanders Depends on the Adoption of Natural Manuring as a Basic Principle in all Farming" (affirmative, Ashburton; negative, Methven B).

The cup was presented to the winning team by Mr. H. W. Sherrat (president of the Rotary Club).

The judge (Mr. E. J. Wood) said that the standard of speaking showed remarkable improvement, not only on last year, but on all debates since the inception of the contest. The seniors produced really strong arguments and developed them well. In addition they lightened what could have been a heavy debate with a touch of humour. Speakers of definite promise took part in the junior debate.

Mr. D. Chisnall presided and Mr. F. Esker was timekeeper.

There was an attendance of about 70.

Reports on Club Activities

WESTERN SOUTHLAND.

Wyndham.—Teams selected for debating contest. Address by the Rev. Mr. Groves, entitled "Experiences Overseas." The club has a membership of 14, and every member was present.

DUNEDIN.

Mosgiel D.H.S.—Social evening to be held. Social committee appointed consisting of E. Herbert, R. McClenaghan, E. Quinell, I. Hammer, J. Henderson, and R. Simpson. A debate was held, the subject being "Different Aspects of Farming and their Advantages"; speakers, J. Kingan, R. Simpson, I. Hammer, and C. Munro. Twenty members present out of a total membership of 22.

West Taieri.—Arrangements for lecturer for next meeting. Mr. J. G. Richards, Department of Agriculture, gave a talk on "Linen Flax"; he described the processing and further interested his audience by exhibiting samples in various stages of growth and manufacture. Ten members attended out of 17.

NORTH OTAGO.

Enfield.—Enquiries to be made regarding the holding of a "shearing school" this season. Dance committee of four members appointed. Mr. W. Widdowson gave an interesting talk on "Seed Certification"; he outlined the system of seed certification, and gave details of the work carried out at the Grasslands and Seed Testing Stations, advising members when in the North Island to take the opportunity to visit these places. An attendance of 15 members out of 16.

SOUTH CANTERBURY.

Cannington.—Delegates selected to attend the annual general meeting of the federation in Timaru. Arrangements for dance, proceeds to be for Patriotic Funds. Two debates held, the subjects being "That Women should Play a Bigger Part in the Activities of the Y.F.C. and in Public Affairs Generally," and "Should Bachelors be Taxed?"; the negative gained the award in both debates. Fifteen members present out of 16.

Geraldine.—Parcels sent to members overseas. Social evening held. Toc H members also being present by invitation. Thirteen club members present out of 34. At the previous meeting a report was given on a recent dance, which showed a credit balance of £13 12s. An interesting talk was given by Mr. C. C. Leitch, Department of Agriculture, on "Farm Management." Twenty-three members attended.

MID-CANTERBURY.

Ashburton D.H.S.—This club held its first meeting since its recent inception. Delegates had attended a meeting of the Mid-Canterbury district committee, and the club secretary reported on the meeting. A visit to the roller flour mills was suggested. A debate to be held at the next meeting, the subject to be "That Small Farms are Better than Larger Farms." Teams selected: Affirmative, D. Gill (leader), G. Payne, and W. Crouchley; negative, G. McArthur (leader), M. Gill, and A. Begbie. A very instructive lantern lecture was delivered by Mr. McGregor on the "Cattle, Horses, Pigs and Sheep of Britain." This club has good prospects, and we wish it every success.

Hinds.—The chairman reported on the recent meeting of the district committee, and also presented the balance sheet of the annual ball, which showed a credit of £2 16s.; £2 of this was donated to the local Soldiers' Parcels Fund. D. Chisnall and W. Taylor were selected to represent the club in a debate at the Rotary Club luncheon. A lecture on "Irrigation" was given by Mr. R. D. Robinson. There was an attendance of 12 members out of 21.

Methven.—One new member enrolled. Reports were given as follows: Methven A. and P. Association annual meeting (W. Hart); Canterbury Y.F.C. Council annual meeting (R. Wightman). Arrangements for club dog trials. Secretary to communicate with Lincoln College in an endeavour to obtain a lecturer for the next meeting. Football match to be arranged with Hinds Club if possible. Debate held with the Methven Farmers' Union, the subject being "That New Zealand Farms Should be State-owned." The club won the contest with 233 points against 230. Mr. Keenan acted as judge. There were 32 club members present out of a total of 66.

CHRISTCHURCH.

Ellesmere.—Arrangements for inter-club football match with the Darfield Club. Challenge from Farmers' Union to a debate accepted. Three new members enrolled. A club debate was held; speakers, A. S. Ford, P. Abbott, and A. Cameron (affirmative); D. Hurford, I. Hamilton, and L. A. McLachlan (negative). The affirmative team gained the award by 248 points to 232. Mr. C. H. Millar acted as adjudicator and Mr. W. H. Cartwright as timekeeper. Nineteen members present out of 55.

NORTH CANTERBURY.

Scargill-Omihi.—Final arrangements for club ball. Speaker for next meeting decided upon. Address by Mr. H. W. Harris on "Tree-planting and Erosion." Twenty-four members in attendance out of 35.

NELSON.

Maruia.—This club has been recently formed, with a keen membership of 14. At the first meeting it was decided to hold a field day, with a dance at night. This undertaking was duly carried out, and was a great success. The field day consisted of a ploughing match and dog trial, and was patronised by members of the neighbouring Murchison Club. An address on "How to Conduct a Meeting" will be given at the next meeting by Mr. W. Blackadder, local county council member. We wish this young club every success.

MANAWATU.

Bunnythorpe.—Lecture by Mr. Barrett, of Massey College, on "Southland"; the speaker also gave an interesting talk on the liaison between Massey College and the farmers. Fifteen members present.

Oroua Downs.—Decided to revive the club library, and a committee of two members was appointed to take charge. A member elected to attend meetings of the local Primary Production Council. Mr. Dawick, secretary of the N.Z. Jersey Cattle Breeders' Association, to be asked to lecture at the next meeting. Three members nominated to prepare short speeches. Mr. L. L. Marsden, Supervisor, Wellington Pig Council, gave an interesting talk on "Increasing Pig Production, and Pig Rearing." Sixteen members present out of 29. At the previous meeting Mr. J. Hill-Motion gave an address on "Calving Troubles and Calf-rearing," and also spoke on the proposed factory veterinary service. Twenty-four members present.

WAIRARAPA.

Carterton.—Debating team selected to debate against the Farmers' Union: P. Gates (leader), R. McKenzie, and M. Bilton. Subject: "That Country Life has More to Offer the Youth of To-day than has City Life." Also decided to hold a debate between junior teams, as follows: J. Jones, T. Fell, and B. Card (affirmative); D. Bassett, R. Rose, and [illegible] Major (negative). Dance to be held in the Parkvale Hall. Interesting talk by Mr. Bliss on "The Ties Connecting the Young Farmers' Club and the Farmers' Union."

Masterton.—Final arrangements for a dance to be held in the Masonic Hall. Mr. N. Lamont, Department of Agriculture, exhibited sound films showing the causes, results, and ways of preventing soil erosion. Thirty-four members present out of 64. At the previous meeting an interesting debate was held among the members, the subject being "That Land Girls Should be Admitted to the Young Farmers' Clubs Movement." The speakers were as follows: E. Hamill, R. Nathan, G. Evans, and H. Renall (affirmative); W. D. Buick, I. Rayner, L. Heckler, N. McNeilage,

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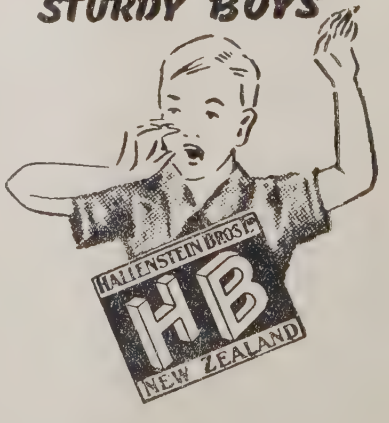

29 H.B. MEN'S STORES—
Whangarei to Invercargill.

and P. Whittaker (negative). The affirmative team were adjudged the winners. Thirty-one members present.

WANGANUI.

Bulls.—Business meeting. Arrangements made for transport to the district field day at Marton. Teams selected for the district debating contest. Two senior and two junior teams chosen. Practice debate held among members present, the subject being "That Straight-out Grassland Farming is More Economic than Grassland Farming Supplemented with Cropping." A report of the annual dance was submitted, showing a credit of £5 5s. 11d. Twelve members in attendance.

Hunterville.—This club has been revived after being in recess for nearly four years. At the recent meeting the following officers were elected: Advisory president, Mr. C. Chisholm; chairman, J. Bartlett; secretary, R. Weston; treasurer, R. Rhodes; advisory members, Messrs. V. Toulmin, C. J. Craig and G. McDonald. There was an attendance of 20 prospective members. The meeting was addressed by Mr. S. G. Avery, chairman of the Wellington council.

Mangaweka.—The net proceeds of the successful dance were paid over to the Patriotic Fund. A practice debate was held in preparation for the district debating contest. Ten members present.

Marton.—Election of delegates to A. and P. Association and N.Z. Farmers' Union. Teams entered for the district debating contest. Club to compete in district efficiency competition. Arrangements for tea, etc., in connection with forthcoming district field day. Address by Mr. Geo. Macdonald, veterinarian, on "Internal Parasites of Our Domestic Animals." Sixteen members present out of 20.

SOUTHERN HAWKE'S BAY.

Ballance.—Meeting held recently and club revived after being in recess for over two years. About 20 prospective members present. The meeting was addressed by Mr. J. H. Bremner (a member of the Y.F.C. Dominion executive, and a former advisory president of the club); Mr. S. Freeman (Dominion organising secretary), who had been present at the formation of the original club in 1934; Mr. S. G. Avery (Dominion vice-president and chairman, Wellington council); Mr. H. M. Poole (chairman, Southern Hawke's Bay district committee); Mr. J. L. Sunderland (secretary, Dannevirke Y.F.C.); and Messrs I. Algie and H. E. Bairstow (chairman and secretary respectively of the Mangatainoka Y.F.C.). A list of officers elected will be published in next month's issue.

Dannevirke.—A small sub-committee appointed to draw up the wording for a brass tablet for the club's centennial trees. Delegates to following gave short reports: Mr. Maddison's education meeting; Farmers' Union; Farmers' Union gift stock committee. Decided to discuss the Y.F.C. memorial scheme at the next meeting. The secretary raised the matter of increased production, and the education conference, and asked for suggestions to forward to the federation's sub-committees. Short talks were given for the impromptu speech competition as follows: "Farm Water Supply" (J. Welsh); "Y.F.C. Clubs in the Middle East" (J. Fredrikson); and "A Visit to a Freezing Works" (K. Brown). Mr. T. D. Scott gave a very interesting talk on "The Mackenzie Country"; he outlined the early history of South Canterbury, and related the exploits of Mackenzie and his famous dog. He concluded by describing farming methods of the past and those in operation at the present time. Forty-one members were present.

Mangatainoka.—Three new members enrolled. Field day to be arranged. Agreed that some of members would attend a meeting to be held to revive the Ballance Club. A very interesting talk was given by Mr. L. L. Marsden, Supervisor, Wellington Pig Council, on "Increased Pig Production." There were 12 members present at the meeting.

NORTHERN HAWKE'S BAY.

Meeanee.—A meeting of this club was held, and the club resumed its activities after having been in recess for about two years. Officers were elected as follows: Advisory president, Mr. J. N. Guthrie; chairman, J. C. Hale; secretary, W. J. Dooney. The club appears to have every prospect of success, as it has restarted with a membership of 19.

TE KUITI.

Otorohanga.—Presentations to J. McDowell, who was recently married, and to D. Davidson, who is on leave from the Navy. Major Watson, recently returned from overseas, where he was attached to the Field Ambulance in the forward area up to the time of Cassino, gave an interesting talk on the battle, and compared the vastly different type of warfare encountered in Italy with that experienced in the desert. His talk was followed by "movie" films exhibited by Dr. McFarlane, which he had taken during the Eighth Army's advance from the time they had halted Rommel in Egypt until Tripoli was reached. These films, coupled with Major Watson's address, proved most interesting. There was an attendance of 18 members out of 23.

Paewhenua.—General business. Prepared talks by two of the younger members: T. Schane ("Pig Hunting") and R. Thomas ("Duck Shooting"). Teams selected to debate on the subject of "Horses v. Tractors": F. Thomas, C. Etteena, G. Morris (horses); J. Peterson, R. Disher, R. Miller (tractors). There was an attendance of 16 out of a total membership of 22.

WAIKATO.

Te Awamutu.—The club sustained a great loss in the death of Trooper Ian Donaldson, who died of wounds in Italy. Members present stood for a few moments in silence as a mark of respect. Ian Donaldson was one of the foundation members of the club. The rules of the Calf Club competition were read and adopted. Three-minute impromptu speeches by all members present; these proved very interesting and humorous. Thirty members present out of a total of 47. A field day was held on Mr. Yardley's farm, Te Awamutu; Mr. Yardley, sen., spoke of the necessity for a good method of farm book-keeping. He also outlined the system of grazing practised on the farm, which was very different from the accepted type of rotational grazing. Mr. Yardley, jun., explained the improvements made on the property since it had been taken over about 10 years previously; fine shelter belts and a good sole of pasture were ample evidence of his statements. There was an attendance of 30 at the field day, including three visitors. At the previous meeting an address was given by Mr. Wallace, of the Pig Production Council; Mr. Wallace spoke on "Pig Housing," "The Care of the Breeding Sow," and "Diseases in Pigs." Twenty-five members present at this meeting. At another previously unreported meeting Mr. M. E. Dodson, B.V.Sc., spoke on "Animal Genetics," "Grass Staggers," and "Milk Fever," to an audience of 32 members.

Okoroire.—This is a newly-formed club which now has a membership of 30. The following officers were elected at the initial meeting: Advisory president, Mr. W. B. Hardwick; chairman, Val Watkins; secretary, W. G. D. Ring; treasurer, D. Makgill; advisory members, Messrs. G. Coates and R. K. Reynolds. Two meetings have been held up to the time of receiving reports, and at the second meeting 12 members gave brief talks on a wide variety of subjects. This club has made good progress during the short time that it has been in existence, and we wish it every success.

BAY OF PLENTY.

Omokoroa.—Business meeting. Debating team (three members) selected. Three members entered for the ensilage competition. Report on recent club dance. Fourteen members present out of 18.

Waimana.—General discussion. Arrangements for a dance. Team to compete in the stock-judging competition with the holders of the trophy, Western Bay of Plenty. Interesting talk on "Farming in New Caledonia," by R. T. White, a club member just returned from overseas. Thirteen present out of 16.

Whakatane D.H.S.—K. Hyland elected to the committee in place of a former member who had left. Discussion took place concerning the proposed radio talk, and comments were made on those that had been recently given. It was decided that each member should write on a certain aspect of the talk, and the various sections would be edited by the committee. There was an attendance of 41 members.

AUCKLAND.

Franklin.—This club has been revived after being in recess for nearly three years. There was an attendance of 16 prospective members at the meeting, and it was decided to re-establish the club; officers were elected and the future activities of the club were discussed. We wish this club every success, and shall be looking forward to reports of its activities.

Pukekawa.—A club has recently been formed in this district, with an initial membership of 12. The officers have been elected as follows: Advisory president, Mr. L. L. Logan; chairman, H. H. Geraghty; secretary, N. T. Murray; treasurer, A. I. Orr. The secretary, N. T. Murray, was for a number of years a prominent member and officer of the Tauranga Y.F.C., and should prove an acquisition to the new club. Best of luck, Pukekawa!

NORTH AUCKLAND.

Kaukapakapa.—Arrangements for a club Rugby team completed. Field day finalised and a dance proposed. Address by Mr. N. Barr on "Shelter Belts." Messrs. T. and M. Alach gave talks on conditions in Yugoslavia. Twenty-one members present out of 45. The field day was duly held and took the form of a visit to Auckland, where the party of 18 members who undertook the trip were conducted over Dalgety and Co.'s wool store by Mr. Millar, and over the Onehunga Woollen Mills by Mr. Stone. The inspections proved both interesting and instructive.

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Women's Land Service

Britain's Agricultural Problem

THE agricultural problem in Great Britain is one of the most curious in Europe, and one of the most complicated.

The population of the United Kingdom has increased by nearly seven million since the last war, while the area under cultivation has decreased by several million acres. This was due to the spreading of the towns and the construction of airfields which, more often than not, encroach on the most fertile soil. Great Britain depended on her neighbours and the British Commonwealth of Nations for a considerable portion of her food supplies. The Axis military successes have not made the solution of this problem any easier.

Democratic Britain did not shrink from facing these difficulties. Democratic methods in practical application have achieved success, for democracy has crossed the political frontier and entered into the economic sector. We have already seen what has been done in Britain's industry. The same kind of thing is being done in agriculture. The Government is elaborating the principles of its agricultural policy in agreement with the associations of land owners, farmers, and agricultural labourers. Mixed committees, composed of an equal number of delegates from similar professional groups, are entrusted with the development of these ideas.

The results are surprising. The area under cultivation has increased since the war by six million acres. The quantity of corn grown alone has risen by a third, potatoes by 60 per cent., and the whole of Britain's domestic sugar ration is grown in Britain. At the present time four million tons of vegetables are produced, whereas in 1938 this figure was only two and a half million tons. And there are three million small private gardens which supply between ten and fifteen million pounds' worth of vegetables every year.

Farmers in England were at first a little afraid to employ Land Girls—many on account of their crops and no doubt a few on account of their hearts! Now there are women of all types and ages among the Land Girls of Britain, though they are generally somewhere between 17 and 40 and all are volunteers. The majority of them have never been connected in any way whatever with rural life before. They had previously been mannequins, manicurists, chorus girls, shop assistants, etc. The majority of them now have only one desire; to continue their work on the farms after the war. Their health is excellent; their food is more varied and more abundant than in the towns. They have a variety of jobs to do of far less monotonous character than in the factories—and out in the open air.

The women in New Zealand's Women's Land Army are doing a grand job too—and here also a number of members of the Land Army will also make it their future career.

Winter Clothes

YOUR warm overcoat, frock, suit, and underwear will have to see you through next winter. If you give them the right care and attention now, they will look fresher and wear better when their turn comes round again. Here are some hints for giving a new lease of life to your spring clothes.

1. Get your clothes as clear and dust-free as possible before you put them away. Woollen jumpers, sweaters, etc., should be carefully washed. Coats, frocks, and suits should be thoroughly brushed; dust, dirt and stains attract the moth.
2. Mend or patch anything that needs attention and see to loose and missing buttons.
3. Tack down pleats, pocket openings, revers, and sew up buttonholes if you want your things to look really well after their rest.
4. When hanging heavy garments see that their weight is evenly balanced. Skirts should be hung by two loops from the waistband; notches cut in the hanger will keep them in place.
5. Clothes which cannot be hung up should be folded over bunched-up newspaper to prevent creases.

You may want your warm clothing at short notice so put everything away in the condition in which you would like to wear it.

Beware the Moth! Out-of-sight must not mean out-of-mind; give the things you put away a thorough brushing and airing occasionally and examine them frequently for moth. Remember, it's the grub that eats your clothes; keep a special look-out for it under collars and in turnings.

Women's Land Service Club

AT a meeting attended by 15 Land Girls held at the Whangarei office of the W.W.S.A. recently it was decided to form a Women's Land Service Club. The following officers were elected: President, Miss Irene Nelson; hon. secretary, Miss W. E. Hay; committee, Mrs. Walsh and Misses Woods and Vining.

A small subscription was agreed upon in order to build up a fund to be used later for visits to points of interest. It is hoped to arrange for lectures on the pig industry and dairy work.

In Britain there is now no white bread; and no ice-cream; no bananas, no lemons, no imported fruit at all except a few oranges for children.

Adults are on small rations of meat, milk, eggs, butter, margarine, cooking fats, bacon, ham, sugar, tea, preserves, sweets, and chocolate.

The ordinary person who cannot show urgent necessity for using his car is allowed no petrol at all.

Travel by rail is considerably more expensive and more restricted than in normal times. There are no more excursions or special holiday trains.

Linen sheets are no longer made. The manufacture of quilts and bedspreads has been cut to a minimum and no tablecloths at all are produced.

CORRESPONDENCE SCHOOL COURSES

OPEN TO LAND GIRLS.

LAND Service members are advised that the same privileges are available to them as to members of the Armed Forces with respect to courses taken through the Correspondence School of the Education Department. A deposit of 10/- is required before text books are issued to pupils, but this amount is refunded when the books are returned at the end of the course.

The Correspondence School Branch has full examination courses in academic subjects, and practical courses in needlework and allied subjects, drawing, arts and crafts, also a full course in agriculture and farming. There are short or long courses.

Write direct to the Headmaster, Correspondence School, Clifton Terrace, Wellington, and mark envelope Land Service member.

THE GOOD NEIGHBOUR.

"Spring's scarce-wakened loveliness
Startles like sudden, golden song
Boughs that were leafless overlong.
Darkly now in dew-soaked earth
Small forgotten seeds give birth
To slender-poising, radiant things,
Petals light as lifted wings . . .
Opening to sunshot rain
Wild hyacinths are blue again."

SPRING

THOUGH spring is usually lavish with her gifts there is little evidence of her prodigality in my garden this year. Of course, the grass is as green as ever and the pear tree is a dream of bridal loveliness, but apart from this, a few straggling jonquils and wallflowers and some anaemic-looking primroses appear to be the sum total of her bounty. However, it is hardly her fault that my daphne bush died of old age, and a youthful visitor decapitated the boronia whilst experimenting with a pair of shears, and the bamboo thicket made such phenomenal growth as to overlay the japonica. Then, as if these tribulations were not sufficient, a well-meaning friend volunteered her assistance. I accepted the offer thankfully, since digging is not my strong point. Alas! it was evidently her specialty for she not only turned over the sods with the machine-like precision of a bull-dozer but she spared neither bulb nor seedling —all succumbed before the onslaughts of her spade. What with one thing and another I doubt if any garden ever looked less like the flowery paradise pictured by books on horticulture. I surveyed my domain with something very near to despair when suddenly it occurred to me: why not have a grand spring-clean and start all over again?

This time I sought the advice of an expert. While he worked out a system of drainage for the southern slopes I planned the shrubbery for which I had always longed. Here in the years to come will bloom pink luculia and purple lasiandra; delicate fuchsias and golden-belled forsythia; Himalayan rhododendrons and azaleas in every shade of red and gold and flame. The ugly boundary hedge has been uprooted and a row of hydrangea cuttings put in its place. I am transferring all my irises to one plot instead of having clumps in odd corners; the rose-bed is being enlarged and every flower border will receive its quota of new plants. Most of my evenings are spent poring over seed catalogues and listing the many flowering things I intend to grow as an "insurance for the spring-tide of next year."

Spring is also a good time to put in a little hard work overhauling our habits: Have you allowed your voice to become high-pitched and harsh, forgetting that a pleasant speaking voice is a distinct asset? Do the corners of your mouth turn downwards more often than not, so that your smile lacks spontaneity? Are you inclined to unload your troubles on all and sundry, thereby spreading depression in your wake, or are you one of those cheery folk who leave people feeling refreshed and invigorated through their contact with you? How adaptable are you? Do you still moan the loss of pre-war leisure in which to follow your own pursuits, or do you make the most of the odd half-hours that come your way?

It will not be completed in a day or a week, this process of individual refurbishing, but just as in gardening, you must be prepared to expend patient and persevering effort in order to get worthwhile results.

"I shall step from my dark frock of care,
And put on gladness as the fields have done.
So shall I slip my cloak of weariness
From off my shoulders, and be glad to-day;
New hope within my heart, and my new dress,
Threaded with faith and courage, shall be gay
As the shimmering flower-dotted fields to-day."

How good it is to be able to say this at the commencement of another spring when the fields are freshly clothed in beauty.

Mary

Lines from a Scrapbook

I HAVE been very interested to learn of other folk who keep "Commonplace Books." I make a new one for each year and last Christmas I gave a friend a fat, black notebook and a handful of cuttings so that she could start one, too. It was Thoreau who said: "I have a commonplace book for facts, another for poetry; but I find it difficult to preserve the vague distinction that I had in mind, for the most beautiful facts are so much the more poetry and **that** is their success. . . . "

I'd love to exchange cuttings with Autumn Tints and Sunny and Ysthbeth. A friend of mine always encloses a poem with her weekly letter —and what a lovely little extra it is! So here is a poem of Thomas Moult's which I have copied for you, Mary. It is entitled, "For Bessie, Seated by Me in the Garden," and this is the first stanza:—

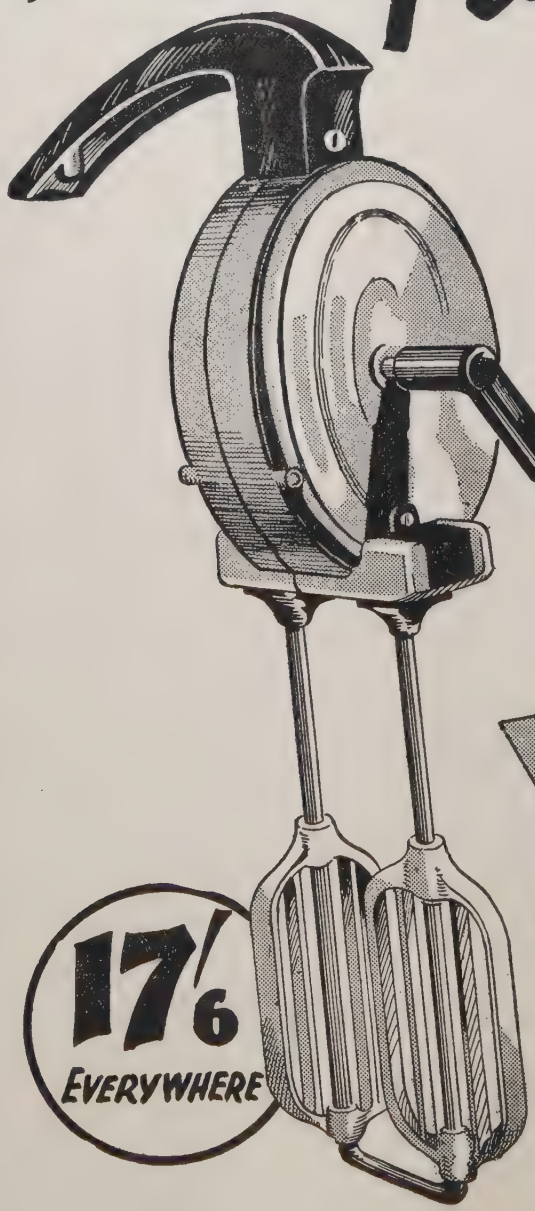
"To the heart, to the heart the white petals quietly fall.
Memory is a little wind, and magical the dreaming hours.
As a breath they fall, as a sigh;
Green garden hours too languorous to waken,
White leaves of blossoming tree windshaken:
As a breath, a sigh,
As the slow white drift
Of a butterfly.
Flower-wings falling, wings of branches
One after one at wind's droop dipping;
Then with the lift
Of the air's soft breath, in sudden avalanche slipping.
Quietly, quietly the June wind flings white wings,
White petals, past the footpath flowers
Adown my dreaming hours.
At the heart, at the heart the butterfly settles.
As a breath, a sigh,
Fall the petals of hours, of the white-leafed flowers,
Fall the petalled wings of the butterfly."

—"TINKLE TINKLE."

Why not Plastic!

Said the Lady

"Why Not?" we asked—and then our plastics experts got busy to produce to-morrow's Beater-Mixer to-day!



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"In the Spring a Woman's Fancy"

By "JACQUELINE."

"In the spring a young man's fancy
Lightly turns to thoughts of love."

So wrote the poet. Had he been writing about the fair sex he might well have said:—

"In the spring a woman's fancy
Lightly turns to thoughts of HATS."

Here is a hat to set any feminine heart a-flutter. Created almost entirely from lilac by the famous designer Aage Thaarup, and finished with a bow of veiling in the same toning, its flowerlike appearance expresses the very spirit of spring itself.

SOMEHOW the sight of young leaf-buds decking the trees in a delicate tracery of green and the glory of newly-opened flowers glowing like jewels against the sombre backcloth of the soil make a woman feel instinctively that she, too, should have some fresh adornment in honour of the mild air and clear sunlight, both so welcome after the long, dreary winter. But just as the bright sunshine shows up the worn patches in the carpet, the shabbiness of curtains and much-used cushions, turning her thoughts to the redecorating of her home, so does it reveal the inadequacies of her present headgear—the crown is too high, the ribbon faded; the shape has never been the same since that day in the rain, and the feather mount is positively moulting. In short, the necessity to possess a new hat becomes more pressing every moment.

If your finances are run on the budget system (and few of us manage otherwise nowadays) you start doing various calculations on the back of an envelope—"So much for little Johnny's shoes, the electric light bill doesn't have to be paid till next week, those towels will simply **have** to last a bit longer! Let me see, now, that leaves so much—yes, I'll just be able to manage it."

For the average woman a new hat is as natural an adjunct to this particular season as daffodils, apple blossom, and that annual outburst of feverish activity known as spring-cleaning. However, it is quite useless trying to explain this to a mere male, who usually clings to the same headgear for years and years and, what's more, absolutely glories in the fact! When at last you send it to a jumble sale or an old clothes drive he grumbles about his loss so frequently that to hear him you would think he had been robbed of all he held dear upon this earth. You bear the fuss with what patience you can muster and then point out that he badly needed a new hat, anyway, and at length he is persuaded into buying one with the same degree of unwillingness as he faces the dentist.

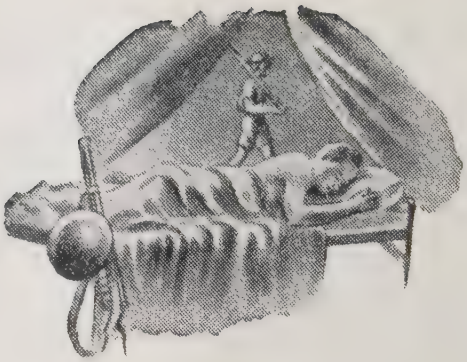
Husbands can generally be divided into three classes: (1) the man who takes a really intelligent interest in his wife's clothes and is prepared to give an unbiased opinion thereon (a rare specimen, this, and valued above rubies); (2) the kind who look up from their perusal of the paper to bestow on you an unseeing glance and say, "Very nice, dear"; and (3) those who exclaim witheringly: "What on earth's **that** thing on your head!" It is difficult to decide which of the latter attitudes is the most annoying. The woman whose taste is invariably the subject of cutting comment would welcome a little indifference on the part of her spouse, whereas her sister longs for some expression of interest, no matter how critical, to break the monotony of eternal approbation from one who is hopeless as a judge of style.

My husband belongs to category number three. A thorough-going conservative in the matter of food, politics, and apparel (woman's, in particular) the only form of head covering which he really aproved on his helpmate was of the "slouch" type. Consequently I wore this sort of hat longer than I care to remember. Once I tried to change it for a modest bowler which was then fashionable, but I was immediately told to "turn that brim down." Rather than commit such a sacrilege I gave it away to a relative and reverted to my former mode.

Then one day I was visited by a friend who formerly had been a faithful adherent to inconspicuous fashions, as our respective husbands held similar views on the matter, but now she sported one of the new haloes and not in any of the chaste tonings of grey or brown which she usually wore, either, but a brilliant turquoise. Moreover, it was definitely becoming and took at least five years off her age! She did not need much pressing before she confessed how the transformation had come about. It appears that they had spent the Christmas holidays with her husband's parents whom they had not seen for some years as they lived in a distant part of the south. Anxious to appear her best she had bought a new outfit for the occasion, completed by the inevitable uninteresting hat. Imagine her astonishment when they were getting ready to leave after the festivities were over and her father-in-law slipped an envelope into her hand and whispered, "A small Christmas present for you, Jane. Go and buy yourself one of those new hats like the other girls are wearing."

Thus encouraged, she needed no second bidding to pick out the smartest creation she could find and her somewhat chagrined spouse has never ventured to voice any protest since. Listening to her story I felt that the time had come for me to take drastic action, otherwise I would be doomed to wear slouch hats for the rest of my life. On my next trip to town I determinedly sought the emporiums noted for their display of captivating models—big hats, little hat, tall hats, saucer hats, like a profusion of rainbow-hued flowers they bloomed in bewildering variety. Surely among such an array there would be one that would suit me without bringing down a flood of husbandly wrath upon my head. I entered the sacred portals. At the familiar query, "What can I do for you, Madam?" I straightened my shoulders, took a deep breath, and plunged: "I want a hat as unlike the one I am wearing as possible, but don't let it be too extreme or I'll

Twice in a lifetime



HE was just a little fellow a dozen years ago.

Too little to know — or care — that even as he slept, Frigidaire men in a distant laboratory were putting the finishing touches on a special new refrigerant later given the trade-mark, "Freon".

Much too little to understand that the real reason for developing this new compound was the safety of just such sleeping youngsters as himself.

He is grown now, and off fighting for his country on a South Pacific island. He is old enough to know that one of his deadliest enemies there is the mosquito, carrier of malaria.

The interesting thing is that it is "Freon" that now comes to his aid. Twice in his lifetime, this one result of Frigidaire research is paying off in personal protection for him and his kind.

For when mixed with chemicals to kill mosquitoes, this compound makes a new and better kind of insect spray. Unlike heavier sprays that fall to the ground, it evaporates almost instantly, leaving the mosquito-killing compounds floating suspended in the air.

"Freon" was not developed as a war product. It came about because Frigidaire, seeking to provide more and better things for more people, never stopped trying to make better refrigerators.

But because it was known and familiar, it was available when the war need appeared — just as it remains at hand for future peacetime developments.

Frigidaire

Division of General Motors (N.Z.) Ltd.

never dare let my husband see me in it."

The assistant was quick to sum up the situation. She placed a chair for me and with a glance of understanding she departed to select a worthy successor to the utilitarian article shrouding my coiffure. From a milliner's point of view I am not an easy person to suit: my face is long and on the thin side, my nose can best be described as aquiline, and I have none of those fluffy curls so flattering to the profile. But did this daunt the salesgirl? On the contrary, it served only to put her on her mettle, and she hurried back with armfuls of loot from the shelves — berets draped, quilted, or embroidered; dashing bonnets and beribboned bretons; stovepipes, flower pots, and demure pincushions; the moderate, fantastic, or frankly spectacular—I tried them all, yet still I could not find the particular model designed to enhance my charms. Indeed, as I surveyed the increasing pile of rejects, I doubted if I ever would. By this time my hair was as wispy as a bird's-nest, my head ached, and I had a crick in my neck from continually twisting sideways in order to see my back view. "Perhaps I'd better have another slouch hat after all," I muttered weakly.

The girl paid no attention whatsoever to my remark and went on opening drawers and rifling stands with even more vigour than before. Meekly I submitted to her attentions while inwardly pondering the hopelessness of my aspirations to fashiondom. Suddenly she stepped back and announced in a satisfied voice, "There! Now look in the mirror."

I obeyed, only to gasp audibly at the vision which confronted me—a chic little pill-box perched aslant my head at a modish angle, the crown being just the right width to balance my lantern-jaw features perfectly, while as for the gossamer eye-veil, it would have made any female under 80 appear glamorous! I felt like the lady of the nursery rhyme: "Lawks a mercy on us, this is none of I."

"Now," said my fairy godmother firmly as she took my old felt and wrapped it in a bag, "You can rest assured that you have a hat which **really** suits you."

I reached the street in a daze. The first person I ran into was Miss Fashion-plate. "My dear," she cooed, "you **do** look smart. What have you been doing to yourself?" This was only the beginning—all the world and his wife seemed to be in town that day and even mere acquaintances stopped to compliment me on my appearance. My greatest moment of triumph came when Mrs. Plutocrat (who never has to worry about the price of anything and always looks as is she had just stepped out of the pages of the latest fashion magazine) asked me to give her the name of my milliner. My confidence thus established so securely I was nonchalance itself by the time the head of the house saw my purchase. In fact, I rather enjoyed the sensation I created and his subsequent criticism affected me as little as the proverbial water on a duck's back.

Present fashions are kind to a face like mine and now I know the exact points to watch out for I regard shopping for a hat as a thoroughly pleasurable occupation and never again have I worn anything even remotely approaching a slouch shape. That first decorative model still has a place in my hatbox. Though the veil is limp and the style outmoded I cannot bear the thought of parting from it, for to me it has proved the "open sesame" to the delights of the milliner's art and remains the symbol of my emancipation from the shackles of masculine prejudice.

In these days of rationing when we are constantly exhorted to make do and mend, to buy war bonds and contribute to patriotic funds, we may perhaps ask ourselves if we are justified in making any addition to our range of headgear this season. Well, to most women a new hat is as good as a tonic—it puts a sparkle into tired eyes, it increases the wearer's poise, and livens the whole personality; to put it briefly, it does marvels for morale. This is of considerable importance, for according to the belief and courage of their womenfolk so is the fortitude and spiritual strength of our men on the battlefront. And if the purchase of some gay trifle of felt or fabric for the adornment of our heads helps to keep our spirits cheerful and our smiles bright during these anxious times, then let us effect our economies in other ways and leave ourselves free to satisfy the natural feminine urge for a new hat wherein to greet the spring!

DOMINION OF NEW ZEALAND

ONWARD

TO THE FARMERS OF NEW ZEALAND

THE new permit and deposit slip system of meat rationing has been introduced for your convenience.

Whether you do your own killing, participate in a sharing arrangement, or buy your meat from a retail butcher the new system will be of great assistance to you.

Arrange now for all meat coupons held by yourself, your family and your employees to be handed in to your local rationing office in exchange for a permit and deposit slip.

Remember it now becomes necessary for application to be made to the Rationing Controller through your local Rationing Officer for authority to continue to participate in an existing sharing arrangement.

ISSUED BY FOOD AND RATIONING CONTROL

TAKE BEAUTY IN YOUR STRIDE

Take beauty in your stride by walking, sitting, bending with the ideal way fixed firmly in your mind.

Especially watch that bend! Curving your spine and slumping your shoulders every time can put a crick in your back, wear you down, fag you to death—because it cramps the organs of chest and abdomen, restricts breathing and digestion.

But...bend to your tasks with a straight back, using the natural 'hinge' at the hips; stand, walk, sit with shoulders and head beautifully balanced on a straight spine, rear tucked under—and what a difference! You don't tire so. You work longer and finish fresher! And once you've made good posture a habit, you've done a lot to improve your figure, your poise, your vitality, your health. Acquire beauty while you work, and duty is *not* so dull!

Published by Berlei in the interests of your better poise . . . your better carriage . . . your better figure . . . your better health.

Berlei knows that right posture begins with the right foundation. And your Berlei is made in keeping with scientific knowledge to provide your figure with the support and encouragement for correct posture. Berlei therefore urges you to persist, in spite of shortages, until you get that accurately fitting Berlei which the Berlei Type Indicator says is yours, and yours alone.

Berlei
TRUE-TO-TYPE FOUNDATIONS

A Cure For The Blues

AMONG the many cures for those moods of depression which we call the blues two remedies stand supreme — contact with nature, either by gardening, walking, or merely spending a period outdoors in the fresh air; and secondly, as "F.B.," of Winton, phrases it, "When you find yourself overpowered by a fit of melancholy go out and do some kind thing for somebody."

"Star," Rangitikei, and "S.J.M.," Hicks Bay, tied for first place, and "Marguerite," Taranaki, and "Trixie," Waikaretu, were second equal. Commended: "Lady Jane," Wellington, and "Tigetty Boo," Katikati.

First Prize (equal)

THE "blues" are as baffling as a jungle enemy—they infiltrate as insidiously and are as difficult to get a crack at successfully. They are distinct from real worries, which can be faced fairly and squarely with the chin up (which incidentally sets the jaw!) But these wretched blues come from nowhere and for no reason. I think a big percentage of farm wives suffer from too much kitchen, and a heavenly change to the open air brings a wonderful mental uplift. The very act of breathing deeply of the outdoors is one of my most valuable weapons in fighting the blues. If it's at all possible I leave the work inside when the blues possess me and go outside. It doesn't matter what I do—garden, walk, collect kindling, or generally potter—there's healing and balm for me, unfailingly, in the fresh air. Everything takes its right perspective and the fancied slight and imagined humiliation become the result of a hyper-sensitive imagination. I say gratefully with the psalmist, "I will lift up mine eyes unto the hills."

What if it isn't practicable to get into the lovely outdoors? Perhaps it's raining hard, the house is mud-surrounded, and my gum boots are no more. The men's discarded wet clothing lies everywhere (for the boiler will dry only so much at a time). The biblical injunction, "Cast thy bread upon the waters," is apposite here. I ring up someone I have neglected and inquire kindly how **she** is faring. In spite of my own special shade of blues her outlook and problems take the spotlight off my own affairs. I write a long-overdue letter and write with the emphasis on the receiver, not the sender. I fill a soldier tin with biscuits—its emptiness has become a reproach. I do something—anything—which I think will benefit someone else. Hey presto! my thoughts have embraced other people, my selfish complex is clearing, the blues are changing like the sunset to a warmer, rosier hue. I have truly "cast my bread upon the waters."

—"Star," Rangitikei.

First Prize (equal)

MY favourite cure for the blues these dull grey days is baking. A bright, warm kitchen smelling of freshly-baked cookies and pies cheers us all. I like to experiment with new dishes—war economies or something extra. The sense of achievement cures my blues. Generally father and the youngsters gather in the kitchen, too, and we all enjoy the results even when no neighbour can come to share.

To cure the blues one must be active: I wrap the children up well and we step out for a long walk, or else I work in the garden when weather permits. There is nothing quite so "soul-satisfying" as the latter,

whether I am busy with flowers, vegetables or merely cutting the lawn again. In summer a swim in the river, a picnic at the beach, or a ramble in the bush provides relaxation.

On dull winter evenings I like to make toys for orphan children; teach poetry to my own offspring; write letters to friends; and knit fair isle patterns. And if I find my life lonely, as it sometimes is, since I live so far in the backblocks, there is always a good radio programme or a well-written book to occupy my thoughts. There are so many ways to cure the blues, so many exciting things to do, that one wonders why one should feel blue at all. It is non-constructive, and the best way to cure it is by active occupation of some kind.

—"S.J.M.," Hicks Bay.

Competitions

October

I hope you will all find time to write to me this month. The title of the competition is "A Welcome Letter" and communications should reach me by October 15.

November

Each Yuletide brings its share of joys and pleasures, yet when you look back over the years there is sure to be one Christmas which stands out more vividly than others in your memory. Maybe it was because of the presence of those particularly dear to you; perhaps it brought you a long-desired gift or the fulfilment of some cherished dream. There are two prizes, one of 10/- and the other of 5/-, for the best accounts of the happenings which contributed towards giving you

"A MEMORABLE CHRISTMAS."

Closing date, November 15.

"MARY,"
C/o. "Journal of Agriculture,"
P.O. Box 3004, Wellington.

Second Prize (equal)

I FIND that I am subject to different forms of blues, each needing different treatment. For the mild type, due to being confined to the house too much, I consider gardening the most effective antidote. As I plan, plant, and cultivate for future loveliness my spirits begin to ascend like the lark, until finally I burst forth into song.

On stormy days I turn out my rag-bag and make all kinds of toys and useful articles from the best parts of worn garments. I sort out pieces of material suitable for dusters, dish-cloths, floor and furniture polishers, together with patches for different articles, and oddments for making into rag rugs. By this time I am feeling that the world is not a bad place to live in after all.

For the blues caused by monotony I try and get out of the rut, even if only for a day. A little fresh air and

ONLY NOW—ONLY IN PHOSPHATE BAKING POWDERS

a valuable food as well as a rising agent!

Before the war, N.Z. baking powders were solely "rising" agents. In Britain and America, however, these old type baking powders had already been superseded by the new phosphate baking powders. The reason was simple and sensible.

FOR BETTER HEALTH. Phosphate baking powders add phosphate to the food. Phosphate is vitally necessary for strong bones and teeth, and nervous and physical tone. It is especially important in the diet of growing children. N.Z. soils, and therefore many foods, are deficient in phosphates. So the change to phosphate baking powders in this country is immensely important. Cooking enriched with phosphate baking powder is going to mean better health.

FOR BETTER COOKING. Home science experts and cookery demonstrators throughout the country were asked to test the new perfected phosphate baking powders as made by New Zealand manufacturers. Their reports were glowing tributes to the improvement and worth of these new baking powders. Many said they would never return to pre-war baking powders even if they did come back.

All the reputable present day baking powders are made from pure food phosphate so you can buy your usual brand, knowing that it will aerate better, keep the goods fresher and do you more good. But in addition, if you have to leave the baking for an hour after adding the baking powder, no harm will result. Just work it gently again and pop it into the oven and it will rise beautifully.

Pure Food Phosphate for baking powder manufacture is a product of Albright & Wilson, and is distributed in New Zealand by Imperial Chemical Industries (N.Z.) Ltd., 16 The Terrace, Wellington.

different company, and I never fail to return home refreshed. The severer form, brought about by such events as sons sailing for overseas service, is relieved by doing something to ease the burdens of somebody less fortunate than myself. For overwhelming calamities, however, I climb hills and walk and walk. I remember how the sorest trial of my life was eased as I climbed a ridge and then suddenly beheld Mt. Egmont. I had not been able to see it from the valley. I thought of the words: "As the mountains are round about Jerusalem so the Lord is round about His people. He will never leave you or forsake you." Ever since then I have loved the hills; they remind me of God's loving protection even when I cannot understand the why and wherefore of many things.

—"Marguerite," Taranaki.

Second Prize (equal)

AFTER considerable thought and analysis in order to search out the cause and effect of this temporary ailment of the mind I have made some interesting discoveries. Almost invariably the blues come at a time when, because of greater and more urgent work to be done, a number of small, irksome jobs begins to accumulate and preys upon the mind of the ever-busy, conscientious housewife. The reaction seems to be a natural desire to "throw everything up and get out of it." This is rather a good idea. We women do stay inside too much, planning and working in our homes and keeping to a rigid routine of life, often at the expense of relaxation and even health. What about a day in town for a change? There's nothing that boosts up the ego more than a new hair-do or hat. The displays in the shop windows are attractive and colourful, and keep a woman youthful in her desires to be well-groomed and always looking her best.

If it's impossible to visit the shops, have you ever closed the back door behind you and wandered over the green paddocks, meditating upon the blue skies and white clouds, the curve of the hills, and the dependence of man on the good, brown earth? You'll soon feel glad that you're alive to enjoy this communion with nature. But so often the blues come on a wet day. Muddy footprints mark the newly-scrubbed floor, the children have to play indoors, the change of weather has whetted the appetites of the hardy farm-workers, and life seems to be drudgery. It was on just such an occasion as this that I realised the secret of curing the blues: forget yourself, your cares and fears, and think about someone else. There's a letter to be written to gladden another's heart; there's a gift to prepare and a call to pay; there's a smile to be given and a cheery word or two—

"Let me look back across the span
'Twixt dawn and dark, and to my conscience say,
Because of some good act to beast or man
The world is better that I lived to-day."

—"Trixie," Waikaretu.

Commended

WHAT do I do to cure the blues? Why, I just cook, and COOK and **COOK**! First of all I tidy the kitchen, put on a cheerful apron, and then light the faithful friend that never lets me down—my cooker. Next, I get the materials together, along with some of my pleasantest glass cooking ware; for a gleaming coloured dish **is** a help, when the day is grey and spirits at a low ebb. By the time this is done I'm feeling better already, and can decide what to cook. Maybe the choice falls on a few special "cup-cakes," golden and toothsome, to cheer one or two friends who have neither time nor opportunity to make them. The thought of how the face of a "shut-in" will brighten at the sight makes me tread on air. Perhaps, again, it will be some dainty glasses of marmalade to sparkle, golden as sunshine, on the window-sill. Some of these may go to sick or lonely folk, to speak of a friend who cares. Or I may plan a surprise meal for the family, trying what a feast can be made with meagre rations and not many coupons.

Perhaps a "good neighbour" will drop in, to share half-a-cup-of-tea, as an English friend puts it. Their ration is only one ounce a week, so it is often literally only "half a cup," and I think how lucky we in New Zealand are to have two ounces. When my friend has gone, taking some of the "spoils" with her, there is a goodly array of dirty dishes! Ruefully I look at them, and these lines come into my mind—

"I've never finished with washing-up!
Well, that's what I sometimes think,
When the meal is done and the dirty things
Are stacked high in the sink.
And scarcely wiped and put away
When they're there again once more;
And my back aches, bending over the sink,
And my hands get rough and sore.
And yet, as I wring my dishcloth dry,
I sometimes pause to pray—
'I thank Thee, Lord, we have food to eat,
To **need** these dishes today.'"—Anon.

Then, as I tackle the dishes with fresh vigour, I think, "Blues? They have vanished completely, and life is as golden as the results of my cooking!" **—"Lady Jane," Wellington.**

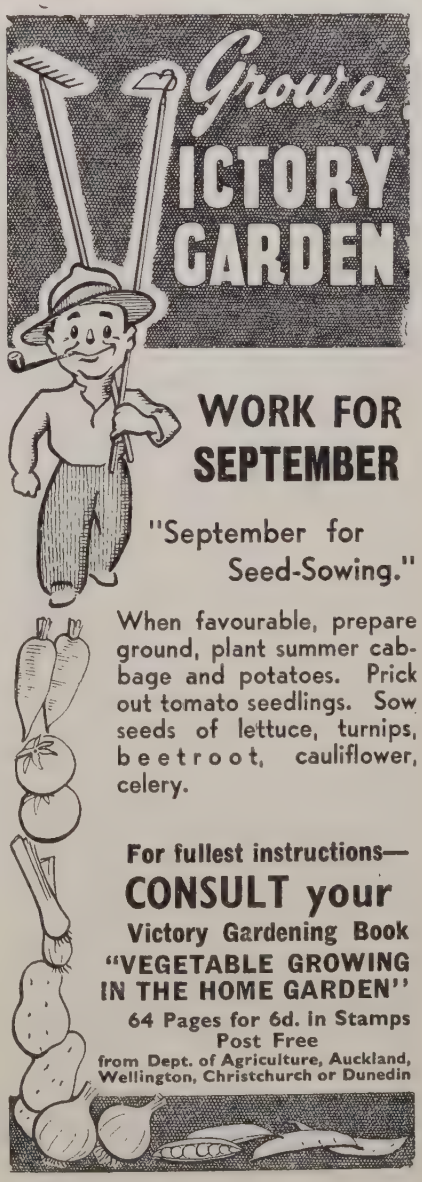
SPRING

Spring with that nameless pathos in the air
Which dwells in all things fair,
Spring with her golden suns and silver rain
Is with us once again.

—Henry Timrod.

Soon will come the strange, heart-rending season
When through the dark, still dawns, where nothing was,
Steals the mysterious whisper of growing grass:
And a joy like pain possesses the soul without reason,
Between the budding of day and the lapse of night,
With the clear cool scent of wet starlight.

—Mary Webb.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GARDEN
WORK FOR SEPTEMBER
"September for Seed-Sowing."
When favourable, prepare ground, plant summer cabbage and potatoes. Prick out tomato seedlings. Sow seeds of lettuce, turnips, beetroot, cauliflower, celery.
For fullest instructions—
CONSULT your
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"VEGETABLE GROWING IN THE HOME GARDEN"
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DRINKING HABITS

Contributed by the Department of Health.

THE only people who seem to worry about the importance of fluid for the continuance of life are those whose business it is to keep the body in health, or to attend to it in disease—in short, the medical practitioners.

It has been stated—and there's scientific backing for the statement—that it's easier to sustain life without food and warmth than without water. The body can't do without regular and frequent supplies of liquid nourishment; it is, in fact, the most important single constituent of the human organism.

Functions of Water

Let's have a look at some of the functions performed by water in the body. For instance, it forms the solution in which food is broken up and carried to the various tissue cells, and by which the waste products of metabolism are excreted. It assists in regulating the body temperature and promotes the elimination of poisons, and it also warns us of the presence of fever. This warning takes the form of a thirst, due to the need for replacing fluid lost by evaporation.

Probably because water is so readily obtainable, the average person overlooks its importance. But there's not the slightest doubt that the great majority of people drink far too little of it. It has been estimated that at least two-thirds of the adult body weight is due to water, and that from four to five pints are lost daily in the various excretions. To maintain health it's obvious that this loss must be replaced. To replace it you'll have to drink several glasses of water daily, in addition to the liquid contained in other food and in the other usual beverages.

Tea or Coffee Habit

The beverages most commonly used for drinking purposes in this country are tea, coffee, milk, and fruit juices, with the first-named preponderating. The tea habit is a deeply established custom, and is productive of more ill health than is usually believed. Some authorities consider that tea, incorrectly made, and over frequently imbibed, is as sure a poison as alcohol, though its effects are much slower and much less obvious.

The main constituent of both tea and coffee is a drug known as caffeine. The effects of caffeine on the body are to increase the volume and rapidity of the circulatory flow, hence the palpitation and dizziness experienced by excessive tea and coffee drinkers; it also increases the rate and depth of respiration, it raises the temperature considerably, and it tends to interfere with digestion, either by retarding or hastening it, hence the occurrence of dyspepsia and flatulence in some heavy tea drinkers. The effects of caffeine, in general, are stimulative in character, and one would expect the nervous system to share in that stimulation.

Such in fact is the case. The overuse of either tea or coffee may produce nervousness, headache, irritability, dizziness, and insomnia. Children are particularly prone to these reactions. Neither tea nor coffee, therefore, should be given them except in a greatly diluted form with water and milk, and then only when freshly made.

To be always sipping tea, especially when strong from long brewing, is simply asking for indigestion and nervous troubles. It is, indeed, an abuse of a most useful drink for daily consumption as a pleasant beverage—in moderation.

Milk the Best

When it comes to the best beverage you can't go past milk. New Zealanders appear to be appreciating milk a little more than they did, and that's all to the good. Two glasses of milk a day for adults and three to four for children are the quantities recommended by the Department of Health. Those of us who are excessive tea drinkers would do well to cut tea out a little, and substitute milk. And don't forget, either, that clean, fresh water is one of the finest tonics in the world.

FAITH

It needs some faith to go on
Planting still,
Against life's storms
Of hatred and ill-will.
I like the faith
That plants some lovely thing
For certain flowering
In the Eternal Spring.

To Know the Heart of Spring

It is not enough to mark that Spring is here
With gown of leaf green shadow and young blossom in her hair,
To glimpse the starry measures she dances with the winds
And hear the flute-notes of her laughter on the quiet air.

To know the heart of Spring one must have lain close-pressed
Against the cold, sweet earth and watched the countless creeping things
That have their life within the grasses; felt the pangs
Of birth in bud and calyx; caught the gleam of restless wings;

Been folded in the arms of lonely hills before
A rain-grey dawn; sought cool tree-haunts where little rivers sing.
Only then for one enchanted rainbow hour,
Is it given man to know the inmost heart of Spring.

—Enid B. V. Saunders.

Daffodils

A bulb's a dark, unsightly thing—
And yet it is a shrine for Spring!
Now, in the murky Autumn haze,
I plant for shining, singing days,
A secret store of daffodils.
No wind that shouts across the hills,
With snow upon its sombre wings,
Can touch or harm these tender things.

This kindly earth will keep them warm—
Secure from frost and hail and storm;
Serene, unhurried and sublime,
This glory, in its own good time,
Will break upon the world and tell
In beauty of Spring's miracle.
Brown wrinkled bulb; gold flawless bloom—
Exultant life from Winter's tomb.

THE PLUM TREE

Spring days bring exquisite things—
A blue rain-pool
And a bird that sings,
Flinging his notes again and again
Down through a silver net of rain
From the plum tree bough.
(The bird has a blossom pinned at his throat,
Like drifting snow the petals float.)

Spring days bring exquisite hours—
A silver cloud
And a host of flowers
Scattering their glory where people pass
In the meadows, amongst the grass
By the long grey road.
(The tree wears a silver petticoat
And liquid gold a tui's note.)
Oh! Spring days bring exquisite things.

—G. BELL.

"BOOKLAND"

"After three days without reading, talk becomes flavourless."
—A Chinese Proverb.

A CREAM stone house in a Wellington street; a door painted green like hundreds of other front doors in the city—a neat white plate bearing the inscription "Country Library Service" is the sole indication to the visitor that this is the entrance to "Bookland."

AS I crossed the threshold I had an immediate feeling of having stepped into what Alexander Smith would call "a finer world within the world." Here is counsel for the mind and "medicine for the soul": a vast store of knowledge which mankind has garnered throughout the ages and preserved through the medium of the printed word is offered here for our enrichment.

Wherever you look there are books, row upon row. They occupy every available foot of space. Tomes of philosophy and religion line the main passageway from floor to ceiling, and even in the narrow confines of the upstairs landing you can satisfy your thirst for information regarding plays and their production, the finer points of cowboy dances, or the rudiments of ski-ing. One part of the ground floor serves as a receiving depot for new books—the crisp, bright covers had a fascination all their own, tempting me to prolong my stay unduly in order to dip into their contents, and the shelves in the adjoining compartment held the latest volumes which had been catalogued and were now ready for distribution. For this is no ordinary library where readers make their choice in person; instead, field librarians convey the books by van to all parts of the country so that as many as possible may share in the benefits of good literature.

The North Island van starts its tour from the headquarters in Wellington, the South Island van from Christchurch, and they cover their respective islands twice during the year. Each van carries anything from 1,200 to 1,500 volumes, and in addition to a wide range of fiction the stock includes publications on sociology, art, biography, travel, economics, aviation, gardening, woodwork, and other practical occupations. These are in constant circulation and are supplemented by fresh supplies from headquarters consigned by rail to the main towns on their itinerary. Thus an excellent service is maintained not only in connection with the free libraries in the larger centres, but for the little libraries in the more scattered districts as well. And when you learn that there are approximately 400 of these smaller libraries being supplied in this way you will realise more fully the immense value of the work the Country Library Service is doing in New Zealand. Actually the service extends from Kaitaia in the north right down to Half-moon Bay in Stewart Island.

For those who are not on the van's route a special hamper service is provided whereby a varied selection of reading material is sent direct to groups of readers, and by means of a rota system the hampers are exchanged at two-monthly intervals. In this way nearly 100 groups in remote places are able to enjoy a greatly-increased range of reading.

The "D" Service, through the agency of the post, operates on behalf of the isolated individual who is not able to link up with a group. An assistant was busy wrapping up a pile of books in readiness for the mail. Glancing at the titles I noticed "The Men Around Churchill," Van Loon's "Lives," and Taylor Caldwell's latest historical novel. Other topics in demand were the growing of fruit, food gardens and defence, microbes, and the Aleutian Islands. Books on current affairs, such as Quentin Reynolds's "Only the Stars are Neutral" and Wendell Willkie's "One World," are particularly popular.

Next door is the department which deals with postal requests. A typical day's mail brings forth enquiries for books on the iron and steel industry in South Africa; wool-spinning and the use of New Zealand mosses and lichens in dyeing; architectural styles in different countries; tatting and patchwork; charades and other forms of entertainment suitable for a birthday party; the life of Madame Curie; industrial troubles, such as strikes and lock-outs, in the British Dominions and the U.S.A. One letter may be from a church society wanting to study life and conditions pertaining to the people of India; the next is from the poultry club of a District High School desirous of obtaining

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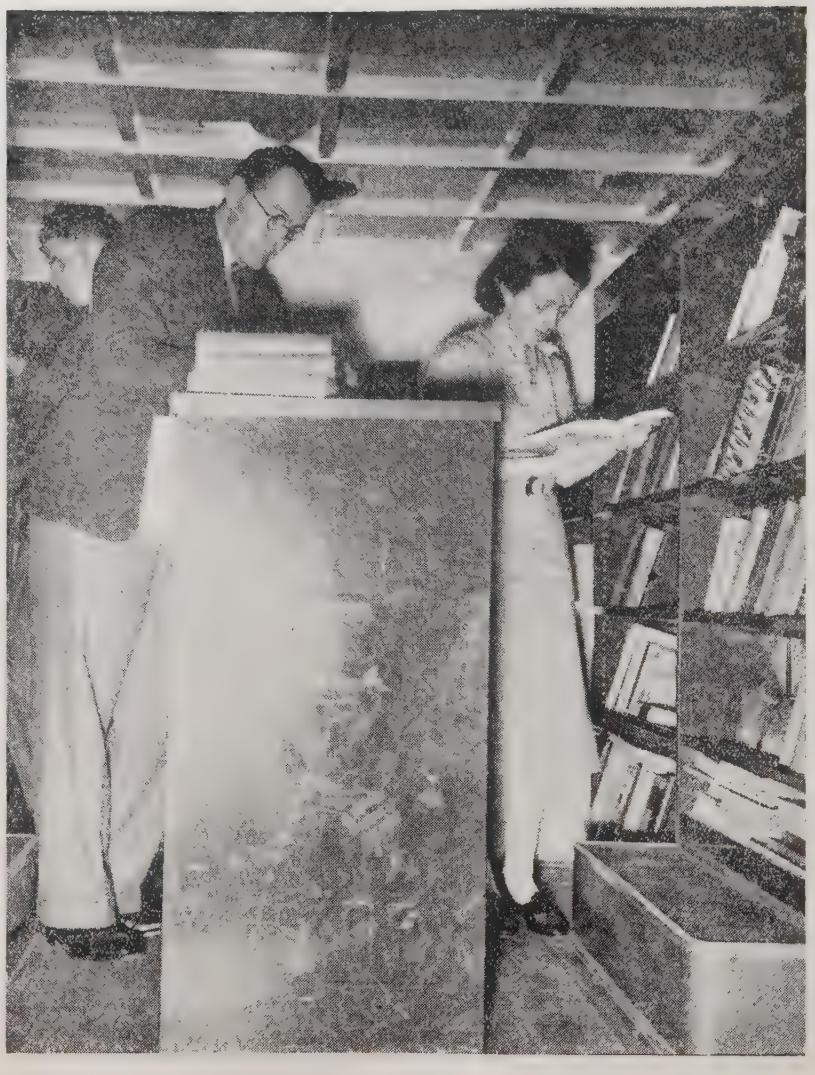
Then there are the loan collections, comprising sets averaging from 20 to as many as 50 books on such diverse subjects as birds, music, Russian theatrecraft, home furnishings and interior decoration, reproductions of famous works of art, film appreciation, painting technique, crafts and hobbies, etc. A librarian writes that the local gardening club is holding a flower show and some literature on horticulture would be appreciated; or perhaps another town is having a Plunket week and works dealing with child welfare and psychology are in special demand. Fortunate indeed is the community that possesses a librarian who furthers its interests in so practical a manner. A great deal of the efficiency of the Request Service is due to the accuracy and skill of the staff engaged in recording and keeping the catalogues up-to-date—no small task when you think of the thousands of volumes on their lists which are lent and returned.

Before I departed down the fan-shaped staircase (picturesque to look upon but not suited to speedy descent) I browsed for a short while among the shelves devoted to essays and poetry, and then visited the extensive travel section, a portion of which was set apart for early New Zealand history and Maori lore and legend, and I was duly impressed, also, by the array of encyclopaedias, dictionaries, and anthologies. As I passed through the green door which opened on to the street I felt that to circulate "these silent teachers, BOOKS, through the whole community is to work greater effects than artillery, machinery, and legislation. The culture they spread, whilst an unspeakable good to the individual, is also to become the stability of nations."



Selecting from the van's stock.

Farmers' Meat Coupons

COMMENT on a Notice under the Rationing Emergency Regulations, 1942, recently gazetted and advertised in the Press, has been made by the Food and Rationing Controller, Mr. J. E. Thomas.

"It now becomes necessary," said Mr. Thomas, "for the farmer who normally kills or intends to kill part or the whole of the meat required for his household consumption, including casual killings, or receives meat from another farmer under a sharing arrangement, and who desires to continue this practice, to hand in to his nearest rationing office all meat coupons in the possession of himself, his family, and his employees."

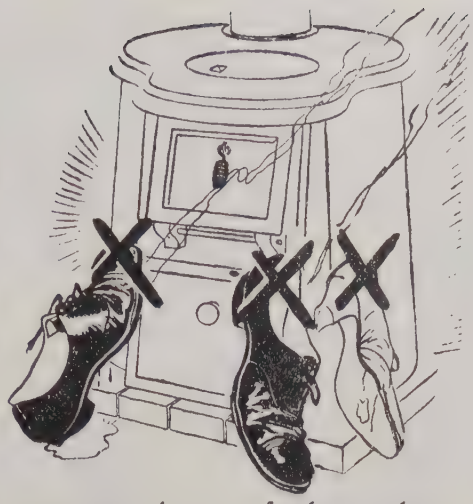
In exchange for each sheet of coupons the farmer will receive a form consisting of a deposit slip and a permit. The permit is to be handed to any butcher who will then supply the farmer with meat required over and above the farm killings, although, of course, the meat supplied by the butcher each week on each permit must not exceed the ration. When a farmer desires to obtain meals away from home he can, upon presentation of the deposit slip at any rationing office, obtain sufficient meat coupons to cover his hotel and restaurant meals.

It is also necessary for any farmers participating in a sharing arrangement to make written application to the Rationing Controller, Wellington, for authority to continue such an arrangement. Authority will be forthcoming in all cases where the arrangement has been operating for 12 months or more; other cases will be dealt with on their merits.

"The farmer who intends obtaining his meat supplies from a retail butcher and also country consumers securing their meat by rail or service car delivery are advised to participate in this scheme also," said Mr. Thomas. "In the past considerable inconvenience has been experienced by farmers and certain country consumers in supplying meat coupons to butchers owing to their infrequent visits to town. Under the new system it will not be necessary for people so placed to worry about meat coupons at all. By securing a permit in place of coupons they can deposit the permit with their butcher, who will then supply the weekly ration of meat as required.

"It is not intended," concluded Mr. Thomas, "that these alterations to the scheme should impose any unnecessary hardship on farmers, and it is anticipated that when the new system becomes effective it will prove far more convenient to all concerned."

HEAT PLAYS HAVOC WITH SHOE LEATHER



YOUR boots and shoes have now got to last you far longer than they ever did before, as leather and rubber are vitally needed for the Fighting Services. This article contains hints to help you to get more wear out of your footwear—with additional hints about the care of stockings. The first point to remember is that any strong heat ruins wet shoes, so don't dry yours close to the fire or on a radiator. When you sit by the fireside don't have your feet close to the fire. Change from your outdoor shoes into slippers or an old pair of shoes to reduce wear and tear on your serviceable footwear.

REGULAR CLEANING AND POLISHING not only improve the looks but lengthen the life of your shoes. First remove dirt and dust, then rub very little polish well in to feed the leather and keep it pliable. Always apply polish when shoes are to be put away for a time.

Suede shoes should be brushed after each wearing but not while they are still wet.

For heavy leather boots use dubbin, which preserves the leather and keeps it waterproof, but it will remove the shine.

If you have two pairs of shoes wear them on alternate days. They last much longer this way as the "day off" gives the leather time to dry out thoroughly.

If you have no shoe tree for keeping your shoes in shape, stuff the shoes well with paper, but remember not to put shoe trees in **wet** shoes or they may stretch.

Perspiration ruins boots and shoes. Before going out in hot weather sprinkle dusting powder sparingly inside stockings and socks or inside the shoes themselves if stockings are not being worn, take off your shoes as soon as you get home and bathe your feet in cold water.

NEVER TRY TO FORCE YOUR FEET into a pair of laced shoes that have not been loosened sufficiently or you will do permanent damage to the stiff backs of the shoes, and never take them off without undoing them. See that the children don't get into this bad habit.

Watch how your shoes are wearing. It is a mistake to go on wearing shoes until they no longer protect your feet in wet weather. Badly worn heels will soon spoil shoes and throw them out of balance. Have them built up directly the first layer of leather is worn down.

Wear new or newly repaired shoes for the first time on a dry day, never on a wet day. Little particles of grit will work their way into the surface of the leather sole and act as a reinforcement.

WHEN YOUR BOOTS AND SHOES NEED REPAIRING take the advice of your shoe repairer; he will know what to do for the best and what repairs he is allowed to do.

WOODEN-SOLED SHOES should never be allowed to wear down to the wooden sole as this cannot be replaced. Have the leather bars attended to in good time.

RUBBER BOOTS AND WELLINGTONS are very precious, so only wear them to keep out the wet, and see that the children keep their gumboots for really wet days and never let them wear them for any other purpose.

Clean rubber boots with a wet cloth and plain water—soap is unnecessary—and dry thoroughly by wiping—never put them near heat.

Put them away in a dark, dry place. Don't let them be folded or bent. Wellingtons with soft tops should be stuffed with paper to prevent them bending.

SOCKS. Woollen socks should be bought large enough to allow for shrinking. When knitting socks work in a strong cotton thread with the wool at the heels and toes.

Mend any hole or thin place as soon as it appears. Many large holes in the heels of socks can be mended either by being darned over a scrap of net or by patching with a piece of new knitting—or a piece from an old sock.

Perspiration tends to rot socks so they should be rinsed frequently, and—never boil socks or stockings.

STOCKINGS. If you really need to buy new stocks be sure to get the right size. When buying non-fully fashioned stockings you will probably need a size larger than with fully fashioned stockings. Reinforce the heels and toes by darning. Oversew the centre seam at the heel on the inside and rinse the stockings through in warm water before wearing them. A patch the size of a penny herring-boned in position at the top of stockings (see illustration) makes a strong reinforcement for the suspender grips. Re-foot women's rayon, lisle, cotton and wool stockings by cutting the new foot from the good parts of the discarded stocking, turning in the edges and sewing firmly in place on top of the worn foot with a fine needle. When putting on your stockings turn in the toe and gently roll the stocking over the foot and up the leg. Take care that rings and finger nails don't catch the threads. Don't suspend stockings too tightly; and if they are too short, add a piece at the top, from an old stocking to lengthen. (See sketch.)

WASHING HINTS. Rayon stockings should always be rinsed before they are put on for the first time, and if possible every time you take them off. They should be handled gently when wet, and when washing don't rub or wring them, squeeze gently in soapy water, rinse out thoroughly and be sure they are bone dry before putting them on.

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Variety with Vegetables

THOUGH many of our present-day foods, particularly cereals, are delicious to the palate, they have lost much of their nutrient value in the various processes of refining, so it is specially important to include plenty of vegetables in our diet to supply the mineral salts and roughage necessary for the maintenance of a high standard of health.

Small quantities of vegetables, cooked and sieved, are now given to quite young babies, the quantity being increased gradually as the child grows older. Unfortunately, there are often one or two members of the family who dislike greens or cannot bear the flavour of swedes or parsnips or pumpkin, as the case may be, but a wise mother can often overcome this by serving the unpopular item in a new way, thus introducing a welcome note of variety in the everyday methods of vegetable cookery.

Vegetable colours lend themselves to attractive arrangement, but you must on no account sacrifice valuable vitamins by using soda to preserve the vivid greenness of leafy vegetables; quick cooking in a small amount of boiling water, with the lid left off the saucepan, is the best means of keeping the colour from changing.

Now for a few suggestions to add the piquant spice of "something different" where our daily vegetables are concerned:—

SCALLOPED CELERY AND CABBAGE.

One cup chopped celery, 3 cups shredded cabbage, 1 cup milk, 3 oz. cheese, seasoning, breadcrumbs, 1 dessertspoon cornflour.

Wash and chop the celery and shred the cabbage and cook lightly. Then place in a pie-dish and cover with a white sauce made of the milk thickened with cornflour, season to taste, add a layer of grated cheese and top with breadcrumbs. Bake in a moderate oven for 20 minutes.

APPLE AND CABBAGE.

Cabbage, apples, 1 onion, salt, small knob of butter.

Peel the apples and slice thinly, then wash and cut up the cabbage into small pieces. There should be equal quantities of apple and cabbage. Now add a grated onion, and cook all together with very little water in a covered saucepan for 1¼ hours over a very slow heat. Put in the piece of butter when the mixture is about half done.

CHEESED CARROTS.

One cup cooked carrots, 1 tablespoon flour, ½ cup grated cheese, ½ teaspoon salt, ¾ cup milk, 1 cup cooked macaroni.

Mash the carrots and mix with the macaroni, which has been cooked in boiling salted water. Heat the milk and stir in the flour, which has been mixed to a smooth paste with a little of the cold milk first, then add the grated cheese and pour over the carrot and macaroni mixture. Put in a hot oven and bake 15 minutes.

SPINACH TART.

2oz. fat, ¼lb. flour, ¼lb. cooked mashed potatoes, ½ teaspoon salt, 1 cup cooked spinach, 1 onion, grated cheese, nutmeg.

Make a pastry by rubbing the fat into the flour and working in the sieved mashed potato and salt. Use a little water to moisten if necessary. Roll out on a floured board and line a pie plate with the potato pastry. Chop the cooked spinach finely, add the onion grated, and seasoning to taste, and use as a filling for the pastry. Sprinkle well with grated cheese and nutmeg. Cook in a moderate oven for ½ hour.

LEEKS DELICIOUS.

Leeks, salt, cheese sauce.

Allow 2 leeks per person. Wash well and slit in half and boil for 20 minutes in a small amount of salted water. Drain well, place on a hot dish, and pour over a cheese sauce, made of milk and leek water in equal proportions with flour for thickening and grated cheese to flavour. Scrambled eggs go well with this dish. (Sent in by "Corana.")

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KUMERA BALLS.

Cooked kumeras, raw sugar, walnuts.

Mash the kumeras well, then shape into small balls and dip in raw sugar and finely-chopped walnuts (any other nuts would do if walnuts are not available). Place on a greased tray and brown in a slow oven.

VEGETABLE CURRY.

One cup sliced potatoes, ½ cup turnips, ½ cup peas, 1 onion, 1 cup carrot, 2 tablespoons flour, 2 tablespoons beef dripping ½ tablespoon curry powder, 1 cup milk, ¾ teaspoon salt.

Wash and prepare all the vegetables except the onion, slicing them finely and cooking them in boiling salted water. Chop the onion and fry it in the dripping, then stir in the flour, curry powder, and seasoning, and gradually add the milk, stirring well and cooking till it thickens. Drain the vegetables thoroughly and pour the curry sauce over and serve piping hot.

THREE-IN-ONE PUMPKIN.

Pumpkin, small quantity of dripping, apples, bacon, minced meat, salt and pepper.

Cut a pumpkin in half, remove the seeds, rub the inside with dripping, and steam half an hour. Take it out of the steamer and fill it with cold minced meat, a little bacon and gravy (or vegetable stock) to moisten. Top with raw apples, sliced thin. Cover with well-greased paper and bake three hours, serving it in the shell as it comes from the oven.—(Sent in by "Biddi-Jan.")

PUMPKIN FRITTERS.

Cooked pumpkin, egg, breadcrumbs, fat for frying.

Mash the pumpkin well, form it into small balls, press flat, and dip in egg and breadcrumbs. Flatten slightly and fry in fat till golden brown, turn and fry the other side. Drain well before serving.

SAVOURY ARTICHOKES.

1lb. artichokes, 1lb. potatoes, knob of butter, 3oz. cheese, parsley, seasoning to taste.

Prepare the artichokes by peeling and cutting into even-sized pieces. Cook in boiling salted water for 5 minutes, then add the potatoes, which have been similarly sliced, and continue cooking till both vegetables are done. Strain off the liquid, leaving the vegetables in the pan and adding the knob of butter, the grated cheese, seasoning and ½ cup of the liquid. Stir over a low heat till well combined. Serve hot and garnished with plenty of chopped parsley.

CRUMBED POTATOES.

Six potatoes, 2oz. dripping, 2oz. breadcrumbs or oatmeal.

Scrub the potatoes thoroughly and boil half the usual length of time. Drain them and dry well. Dip them first in hot dripping, then in the breadcrumbs or oatmeal and place in a meat dish and bake in a hot oven for ½ hour. Serve with brown gravy or a sauce made from tomato puree.

POTATO NESTS.

Potatoes, seasoning, eggs, bacon.

Cook potatoes in the usual way, mash smooth and season well. Shape into mounds and place on a greased oven tray or in individual fireproof dishes. Make a hole in the top of each mound and break in an egg, then cover with pieces of bacon. Bake in a moderate oven till the egg and bacon are cooked. (Peas can be substituted for the egg, if desired, or any other vegetable which combines well with bacon.)

PARSNIP CAKES.

Two large parsnips, 2oz. cheese, parsley, breadcrumbs 1 cup gravy or vegetable stock, onion, beetroot.

Cook and mash the parsnips, then stir in the grated cheese. Turn on to a floured board and shape into cakes about an inch thick. Roll them in breadcrumbs and grill on both sides. Serve hot with vegetable stock which has previously been boiled up with grated beetroot (or carrot) and onion. Brown sauce or gravy could be used instead of the vegetable stock if so preferred.

TURNIP AND MARROW.

One lb. grated turnip, marrow slices, 1 onion, 1oz. dripping, seasoning, 1 small cup milk.

Mince the onion and brown in the dripping for a few minutes. Then add the grated turnip, a few slices of marrow, and the seasoning, and pour over these the cup of milk. Cook gently for ¾ hour.

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